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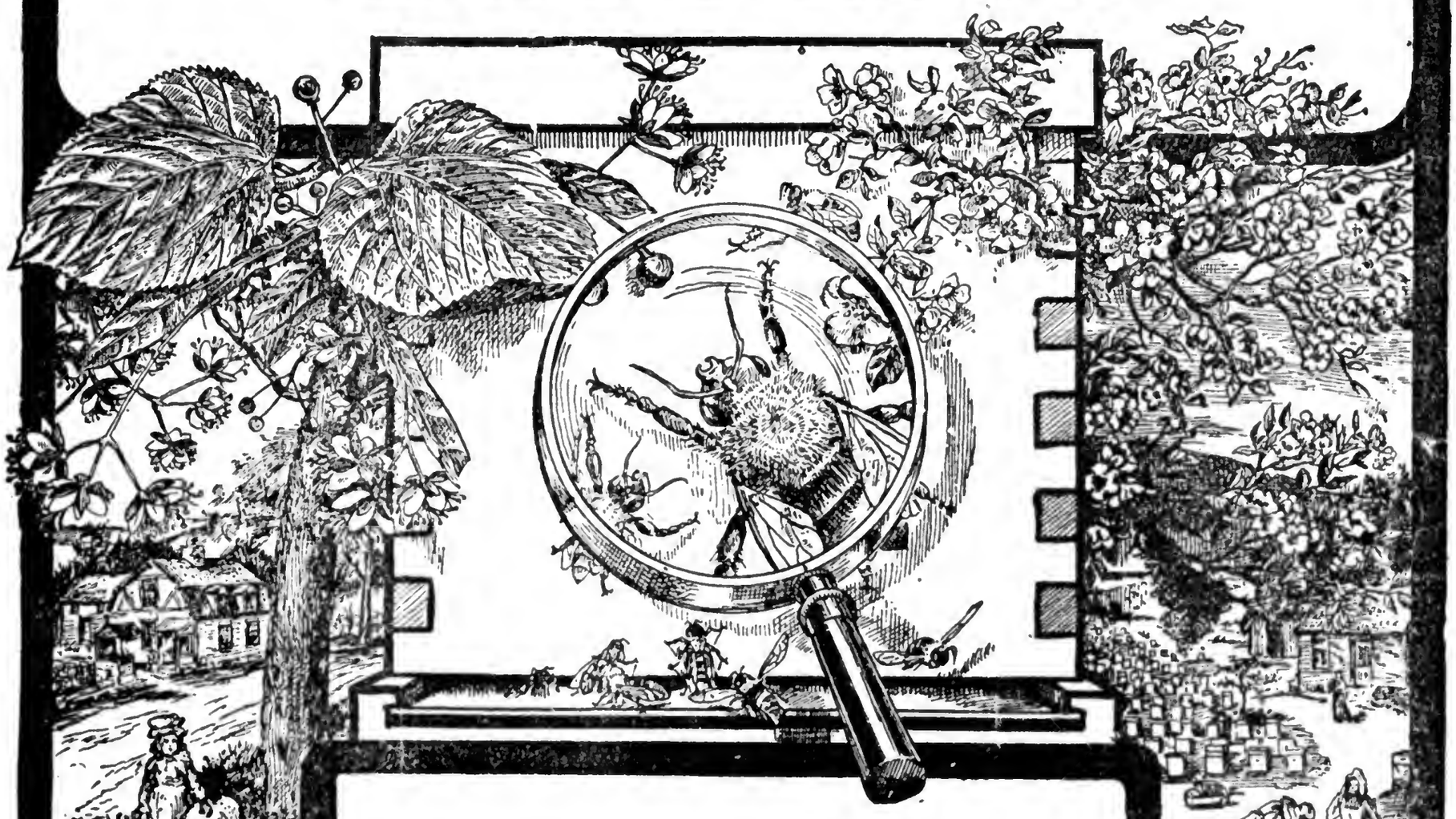

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Our New Features and Policies for 1903.

The year 1902 was one of the best, if not *the* best, we have ever had in all our history. The policy that we have pursued for years back, of using selected stock and fine workmanship, is winning new friends every year. In spite of the fact that we are every year putting in thousands of dollars' worth of new automatic machinery, and additional floor space, and in spite of our higher prices, we are often crowded to our utmost to keep up with orders. Last year we put in something like $5,000 worth of new machinery. The result of all this is both to increase our output and to enhance the quality of workmanship wherever that may be possible. We now have more automatic machinery in operation than we have ever had before, and so constructed and adjusted that the stuff must come out smoothly cut and of the right size. All the finished stock from the other machines is rigidly inspected before it is sent out. Indeed, we have one man who makes it his especial business to inspect all work of whatever character before it leaves the factory, and then it is re-inspected before it is packed for shipment. If any of our customers receive any defective goods we shall be pleased to have immediate notice.

In our stamping department we have put in a complete new set of dies for making our smokers. We are now prepared to furnish three sizes of the new improved Corneil, and one size of an entirely new smoker, our Vesuvius breech-loader. These smokers, in point of workmanship, construction, convenience in handling and opening, we believe to be the best we have ever manufactured, and we predict for them a large future. For further particulars, see description on page 22.

The cutting of our hive lumber will still be characterized by the same accuracy and smoothness of work. The dovetails themselves will be clean and polished. The top and bottom edges of the sides and ends will be brought to a smooth finish on a sizing-machine that makes not only a clean planed edge, but sizes the boards absolutely to a width.

We present this year a new style of Danzenbaker cover with metal-bound ends, without a nail in its construction, that we believe will stand any climate. For particulars see page 3.

The new Danzenbaker bottom-board permits of a variable entrance to suit the season. It can be closed entirely or opened up to any width up to ⅞ inch deep; or the floor-board can be removed entirely (if the bottom of the frame is covered with wire cloth), giving a space under the frames of 2 inches for the moving of bees to outyards or for shipping them any distance. See page 4.

The Danzenbaker hive with its 4x5 section and closed-end frame is steadily gaining favor. We were loath to give it very much prominence at the start; but so flattering were the testimonials from those who have tried it in comparison with other hives, we now feel like urging it on all of our friends who desire to produce a strictly "Fancy" or No. 1 comb honey. See next page.

Owing to the great advance on cost of material —particularly of lumber—and the general advance in labor, we have been compelled to make an advance in the price of our supplies.

Save Freight and Time.

The management and operation of railroads seem to tend to discourage the sending of small shipments long distances requiring frequent transfers. Such shipments are often weeks in transit, and sometimes do not turn up at all. The minimum charge on any freight shipment is the first-class rate on 100 pounds between point of shipment and destination. In some cases from 200 to 300 pounds will cost no more freight charges than a box of 20 pounds.

As a convenience to our customers, as well as a saving in time and freight charges, we have arranged for the sale of our goods in different sections of the country through jobbers and wholesale dealers to whom we ship in carload lots at much lower rates of freight than can be obtained in small lots. Where the distance is not so great as to make the freight too much for the dealer to stand alone, these dealers sell the goods at regular catalog prices. At points on the Pacific coast and other far western and southern points, higher prices are made to compensate for the freight. The needs of different sections of the country vary and very few of the dealers handling our goods keep a full line of everything listed herein. They aim to keep a supply of such standard items as are generally called for. You will do well to write to that dealer in the following list who is nearest or most convenient to you, giving a list of your needs as early in the season as you can, so that, if he does not have what you want in stock, he may get it for you.

The following are our branch offices and dealers to whom we ship in car lots:

The A. I. Root Co., No. 10 Vine St., Philadelphia, Pa.

The A. I. Root Co., Syracuse, N. Y., in charge of F. A. Salisbury.

The A. I. Root Co., Mechanic Falls, Maine; J. B. Mason, Manager.

The A. I. Root Co., 1024 Mississippi St., St. Paul, Minn. H. G. Acklin, Manager.

The A. I. Root Co., San Antonio, Texas. Udo Toepperwein, Manager.

The A. I. Root Co., 1200 Maryland Ave., S. W., Washington, D. C. Saffell & Kerrick, Managers.

The A. I. Root Co., 17 San Ignacio, Havana, Cuba. F. H. deBeche, Manager.

J. B. Hamel, Cardenas, Cuba.

Hooper Bros., Kingston, Jamaica.

Geo. W. York & Co., 144 Erie St., Chicago, Ill.

M. H. Hunt & Son, Bell Branch, Wayne Co., Mich.

Geo. E. Hilton, Fremont, Newaygo Co., Mich.

C. H. W. Weber, 2146 Central Ave., Cincinnati, Ohio.

Walter S. Pouder, Indianapolis, Ind.

Vickery Bros., Evansville, Ind.

Joseph Nysewander, Des Moines, Iowa.

John Nebel & Son, High Hill, Montg. Co., Missouri.

Rawlings Implement Co., Baltimore, Md.

Prothero & Arnold, DuBois, Clearfield Co., Pa.

F. H. Farmer, 182 Friend St., Boston, Mass.

Carl F. Buck, Augusta, Butler Co., Kans.

D. M. Edwards, Uvalde, Uvalde Co., Texas.

The L. A. Watkins Mdse. Co., Denver, Colo.

Delta Fruit & Produce Co., Delta, Colo.

Madary Planing Mill, Fresno, Cal.

Smith's Cash Store, San Francisco, Cal.

Portland Seed Co., Portland, Oregon.

Lilly, Bogardus & Co., Seattle, Wash.

Union Hive & Box Co., Los Angeles, Cal., handle only a limited line of our goods, such as extractors, perforated zinc, smokers, sections, shipping-cases, etc. The hive and frame stock they make.

There are a number of other dealers, and a complete list will be mailed on application. We are also represented in several foreign countries.

Local Dealers.

Besides these dealers who get carload lots there are a number of local dealers handling supplies for their localities who obtain their supply either here or of one of the above-named jobbers, as may be most convenient. These are dealers in general merchandise, or progressive bee-keepers, or others interested in improved methods of bee-keeping in their locality. If there is such a dealer in your vicinity it will be to your best interest to place your order with him; but be sure to insist on having Root's goods, and do not accept inferior substitutes.

Shipping Facilities.

Our shipping facilities are of the best, being located on the Northern Ohio Railroad, which is one of the Vanderbilt system, which aggregates several thousand miles of road: also on the B. & O., which crosses all the great east-and-west lines through Ohio. We have only the U. S. Express Co. here, but have an arrangement with them securing quite a reduction from their regular tariff rates. There is in operation a suburban electric line to Cleveland, which carries package freight, and by means of which we reach other express companies so as to send an express shipment through to destination by the delivering company, thus insuring lower charges in many cases than where two or more companies handle the shipment. Information in regard to the cost of transportation to any point furnished on application.

Terms.

Our terms are cash with the order. We pay cash for material, and pay our helpers cash every week for their work; therefore we must have cash in advance for the goods furnished. Do not ask for credit. See back of order-sheet for further particulars and rules for ordering.

THE DANZENBAKER HIVE.

This hive is rapidly gaining favor, especially in the Eastern States, where tall sections and closed-end frames are used to a considerable extent; and within the last year or so the Danzenbaker system has been working its way into California, Oregon, and even into Cuba. At some of the honey-exhibits in this country the comb honey from it has carried off the first prize. Some of the finest

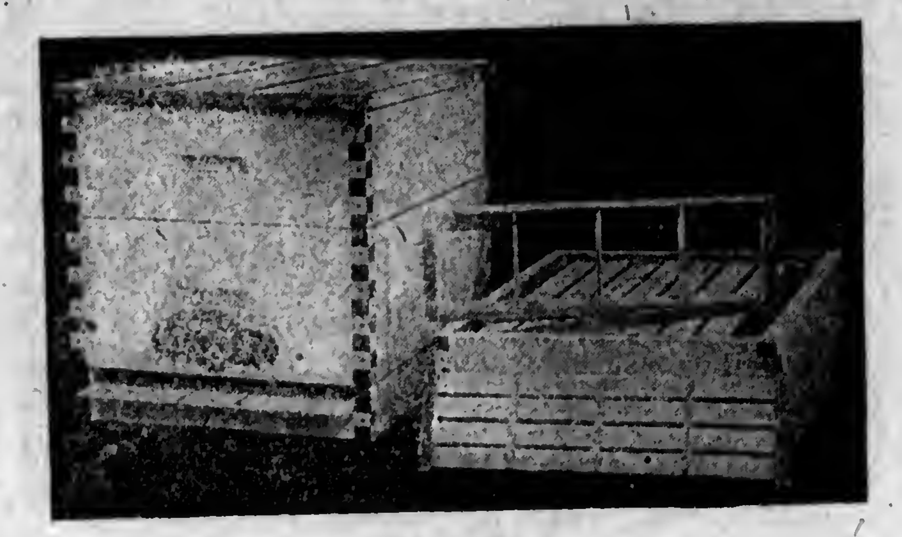

Fig. 406.

honey we have ever seen was produced in Danzenbaker sections; and in the opinion of those who have given the hive and system an extended trial there is nothing to equal it for the production of a fine article of comb honey. Indeed, in some markets comb honey in Danz. sections commands one and sometimes two cents more per pound than other fancy honey.

Mr. Danzenbaker has long been an advocate of warm supers and warm hives; for he has always insisted that, for the production of comb honey, the super and hive must be warm in order to do the best work in wax-building. To a very great extent the Danzenbaker hive is double-walled.

The brood-chamber itself has the same dimensions as the regular ten-frame Dovetailed Langstroth hive, except that it is shallow; that is, it

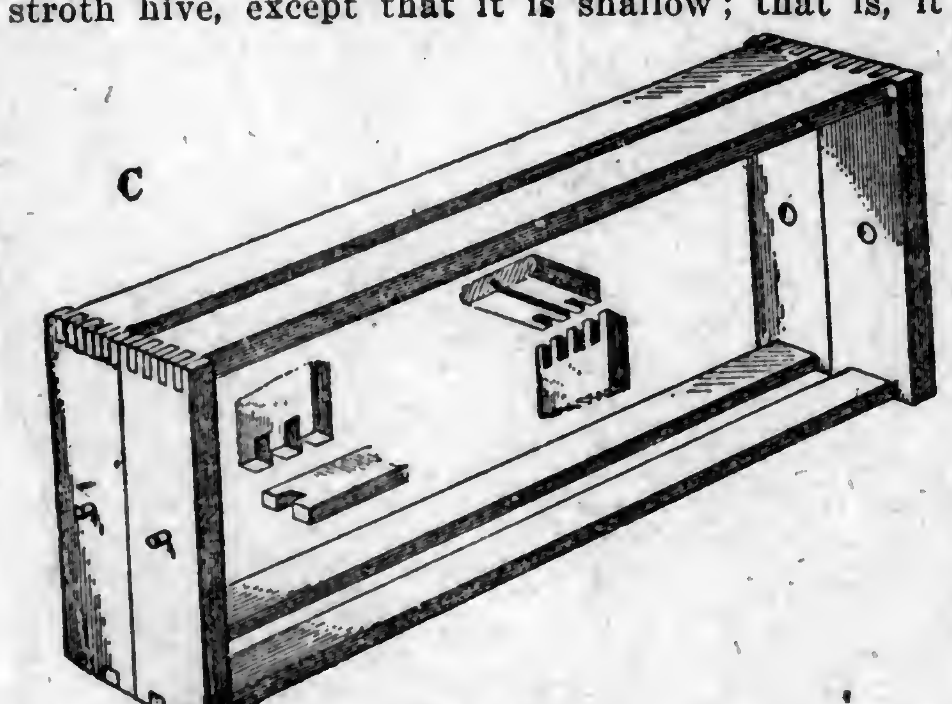

Fig. 407.

takes ten closed-end brood-frames 7½ inches deep and 17 inches long. Each brood-frame is supported by a pivot in the center of the end-bars, so that it may be readily reversed. These brood-frames retain all the advantages of frames peculiar to this class, viz., being reversible, they insure the building of combs to the bottom-bar, as there is no opportunity for air-currents around the ends of the frames; combs, as a rule, are built clear out to the end-bars. This one feature makes them warmer for winter. When a division-board is used on each side we have practically a dead-air space around the ends and sides of the brood-nest.

The Danz. brood-nest has the same capacity as the 8-frame Dov. hive—a capacity that has generally been recognized as the best for the production of comb honey. But Mr. Danzenbaker has gone further by making his brood-nest shallower and wider—increasing the amount of surface for the super, and bringing the brood itself—a feature which many consider important—closer to the surplus.

Fig. 507.

The super makes use of fences and 4x5x1⅜ plain sections—sections that outsell anything else in some markets, particularly those of the East. In other respects the super is quite similar to our regular P, described and illustrated elsewhere.

The bottom-board is one of the special features of this hive; and so excellent is it we use it as a regular equipment on all the hives we manufacture. For particulars see page 4.

The cover is made up as described on the opposite page.

We sell, in connection with this cover, a deep telescope cover 11¼ inches deep, and just large enough to slip over the whole hive. In the production of comb honey this cover protects the hive from the hot rays of the sun, and during cool nights helps to maintain the comb-building heat of the super. For the production of a No. 1 and Fancy comb honey this is a great help. We do not recommend this cover for wintering where it is very cold during winter.

A super cover must be used in connection for either summer or winter.

Mr. Danzenbaker's "Facts About Bees," a book of some 70 pages, has been fully revised. It goes on to describe fully the Danzenbaker hive and his special system of producing comb honey, whereby he secures such a large percentage of Fancy. When we come to figure the difference between Fancy and No. 1, and between No. 1 and No. 2, in the open market, it will be seen that it will pay one to investigate the Danzenbaker system.

This book will be sent for a 2c stamp to pay postage.

NOTICE.—The Danzenbaker hive is not made in the 8-frame width.

Price List of Danzenbaker Hives and Parts.

DESCRIPTION OF PARTS.	Designating letter or number.	Nailed Painted	Price in flat in lots of 1	5	10	25	Weight of Ten.
Adjustable bottom, floor made up	A	32	22	1 00	1 90	4 50	37
Metal-bound cover, made up	D	43	33	1 50	2 70	6 25	45
Metal-roofed telescope, cap 11¼ inches deep	K	70	55	2 55	4 90	11 50	80
Metal-bound super-cover ⅜ inch thick, to be used with cap		15	15	70	1 30	3 00	15
Danzenbaker hive-body with 10 frames and follower	D5	90	70	3 25	6 00	13 50	120
The same as D5 with foundation for 1-inch starters added	D6	1 00	75	3 50	6 50	14 75	120
One-story hive consisting of cover, bottom, body, with frames and follo	D. AD5	1 65	1 25	5 75	10 50	24 25	200
The same as AD5 with foundation for 1-inch starters	D. AD6	1 75	1 30	6 00	11 00	25 50	200
Danz. super with 8 section-holders, 9 fences, 3 springs, without sections	2M	75	65	3 00	5 50	13 25	100
Danzenbaker super, same as 2M with 32 4x5 plain sections	3M	90	80	3 75	6 50	15 75	120
Same as 3M with foundation for 1-inch starters	4M	1 00	90	4 00	7 00	17 00	120
1½-story Danzenbaker hive complete without sections and starters	D. AD52M	2 40	1 90	8 75	16 00	37 50	800
1½-story Danzenbaker hive complete with sections and starters	D. AD64M	2 75	2 20	10 00	18 00	42 50	820
Either above hives with telesc. cap, and super-cover instead of flat, add		45	40	1 80	3 60	8 25	

Danz. brood frames, $2.25 per 100; section-holders, $2.00 per 100; hanger cleats, 2c each; $1.50 per 100.

DOVETAILED HIVES AND FIXTURES.

Our hives and inside fixtures, as in the past, will maintain the splendid reputation they have earned, both in the selection of lumber and in the general smoothness and accuracy of the work. Our motto has been, not "How cheap?" but "How good?" and the public has appreciated this by showing a strong preference for Root's goods. So great has become this demand that we have been compelled to put up a large plant, properly equipped with the latest machinery; and we think we are safe in saying we have the largest manufacturing establishment devoted exclusively to the making of bee-fixtures in the world; for we make everything, whether it be of metal, wood, or other material, that a bee-keeper can possibly require.

In showing our line we desire to call the attention of our readers to the fact that we make a variety of hives and hive equipments. We are, in consequence, in position to furnish every bee-keeper with almost any combination he may desire.

The Excelsior Cover.

The cover proper consists of two boards, B, B, five or six inches wide, spaced two or three inches apart, and spanned by a ridge-board, A, that has been channeled out on the under side to come down over the raised projections in B, B. When

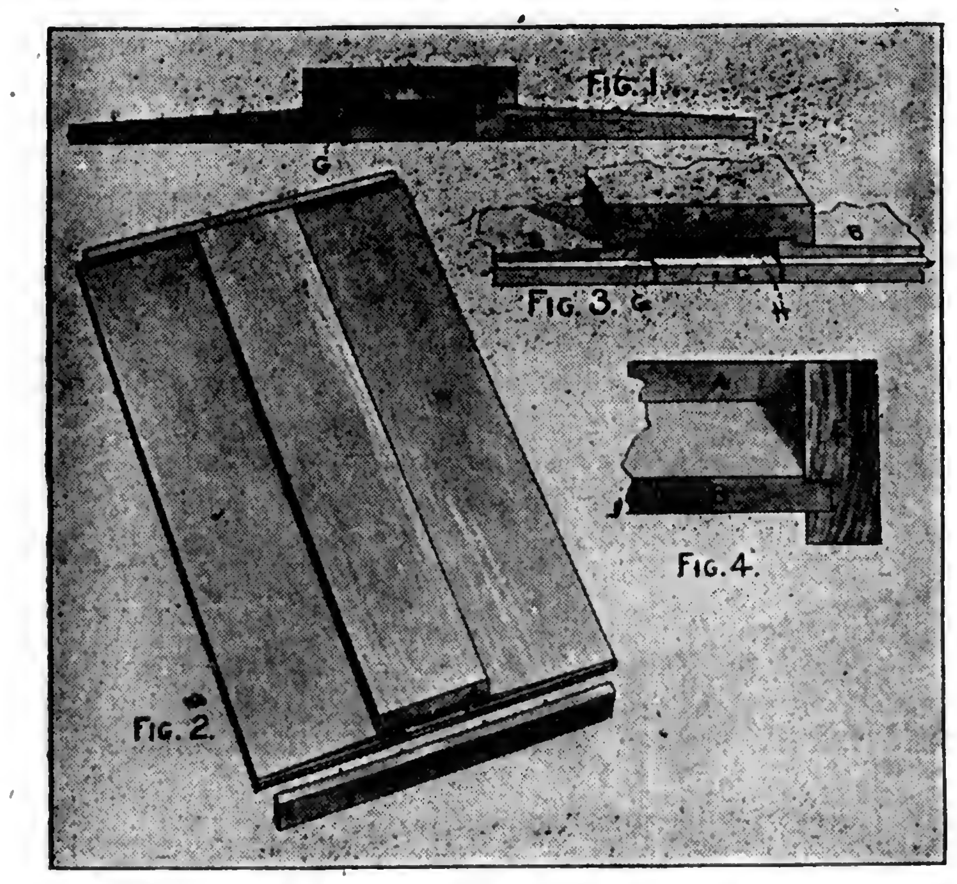

Fig. 301.—Designated as E.

the ridge-board is nailed to the two side boards—the nails being entered on the *under* side of the cover, and on a slant—no beating rain will ever work its way through. The end-cleats, when nailed as indicated, secure the whole rigid and true. A cover made as this one is, of three narrow boards, will be less liable to check than one wide one similarly cleated.

Unless otherwise specified, this cover will be furnished with all our hive combinations.

The New Danzenbaker Nailless Cover.

While we furnish the Excelsior cover, we do so solely because it has been a standard. There are other covers, however, which we believe to be better, but which we do not furnish regularly until they have served their probation in various cli-

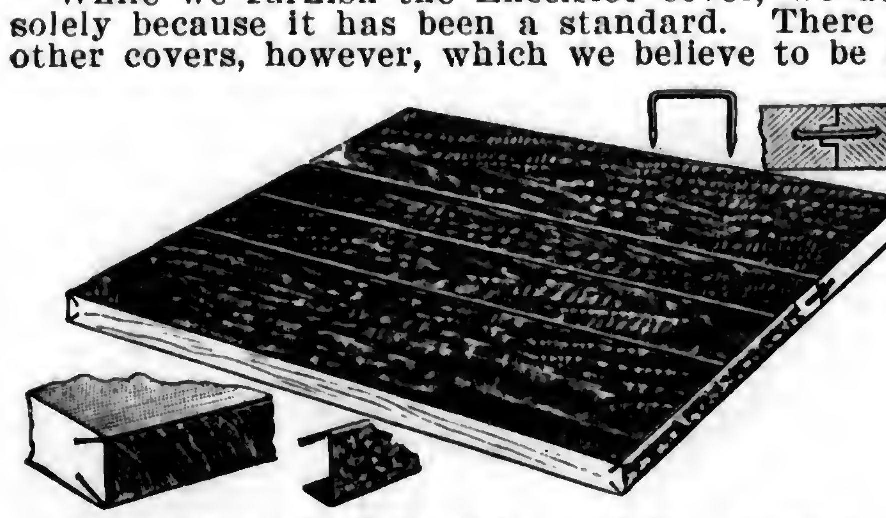

Fig. 500.—Designated as D. Patent Pending.

mates for a year or so. The new Danzenbaker is one which we believe will become very popular because it is a flat cover—a feature valued by many—and because it is reversible either side up, cannot warp, nor can it gap at the joints, due to unequal shrinkage of the lumber of which it is made. Not a nail is used in its construction. The three boards are tongued and grooved, and put together with paint. To prevent the several pieces from separating, due to shrinkage, a double-pointed tack or staple driven in the end of the grain (see cut), and spanning the joint, holds the two boards securely together. No matter how much they may shrink in width, the joint between the boards will always be tight. To effectually prevent warping, a very ingenious channel iron has been devised to slip into corresponding saw-cuts made in the ends of the boards. This iron, when slid endwise into place, effectually prevents all warping; and yet it makes both boards perfectly plain and flat on either side without projecting ends.

These covers are assembled at the factory, and all our customer has to do is to paint the completed cover.

Our Double Air-spaced Cover.

This we consider one of the best covers we have ever made. It is made up of ⅜ boards, one set of boards crossing the others, and separated by ⅜ cleats. It is then covered with a special grade of paper which, on a hive-cover now in our office, has been exposed to the weather for 12 years, and is still good as ever. The paper is secured with large-headed tacks; the cleats B B are next slipped over the ends, and then the side edges are held in place by means of an additional strip of wood ⅜x⅞. From the very nature of this construction such a cover can not leak, warp, or twist, provided it is properly nailed, and is, therefore, spe-

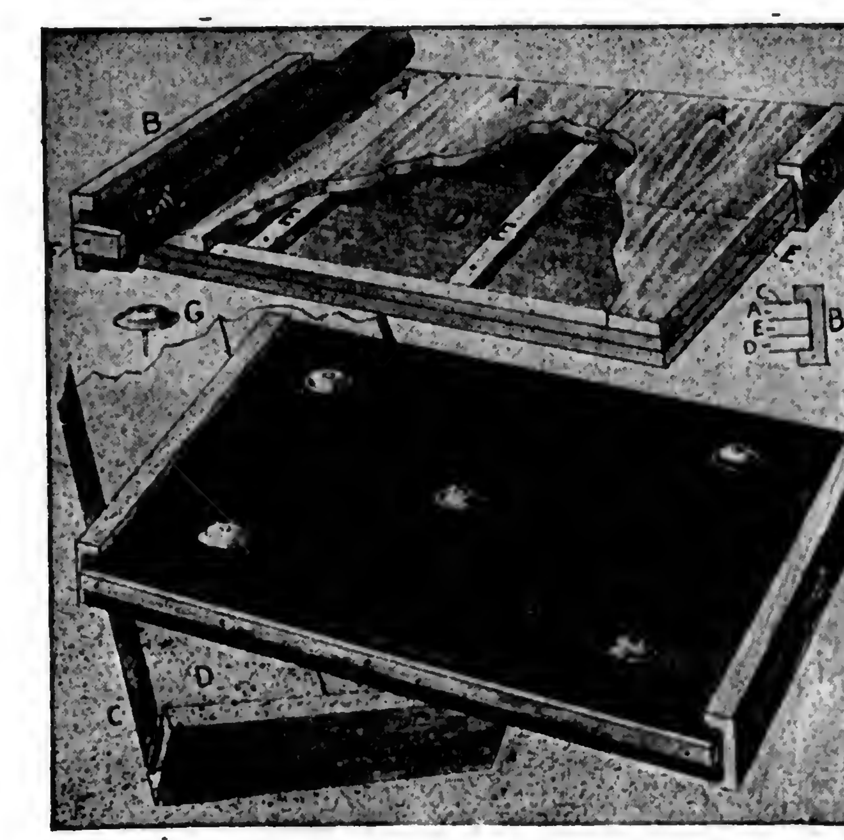

Fig. 402.—Designated as F.

cially adapted to climates where there are ex tremes of temperature. The top of the cluste will not chill cool nights, neither will the com be liable to melt down during the hottest days, b cause the air-space between the two thicknesses boards will prevent this. For covering con honey supers it has no equal.

This cover is furnished as an option in pl of the regular Excelsior.

Tin will be furnished in place of paper fo cts. per cover extra; but we believe our pat will be well satisfied with the paper, because, is properly painted, it will take up enough make it last as long as the wood under it.

The Root Ventilated-gable Cover.

There are many who prefer a double cove ... for extremely warm climates, with little ... shade, we do not know of anything bett ... this. It is constructed of ⅜ boards ... cleated at each end by means of char ... grooves into which both the top and und ... are inserted. Through the center and ... crosswise between the upper and lowe ... boards there is a gable-piece, the purpose ... is to stiffen the cover. The space on ...

MUTILATED PAGE

is not closed up ordinarily; and this open space ⅜ inch by the width of the side permits of a free and constant circulation of air, as indicated by the arrows at C C. We have sold this cover in a modified form for a good many years; but this is

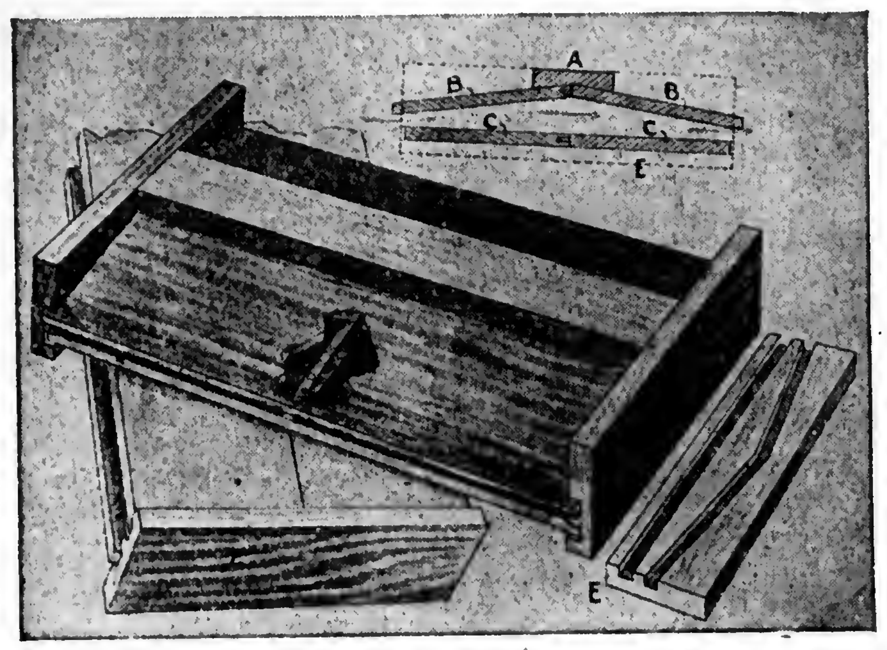

Fig. 404.—Designated as G.

the first season we put it out with the improved end-cleats having the channels as shown at E, in the lower right-hand corner of Fig. 4. These channels will absolutely prevent the boards from warping; and if they be properly nailed up in accordance with the directions accompanying there will be no splitting or checking. This cover is supplied only on option, and is designated as G

The New Danzenbaker Bottom-board.

This is a radical improvement over anything we have hitherto sold, having features that are important and valuable. It has a tilting floor-board pivoted in the rear, by which the entrance can be graduated to any depth according to the season and the individual preferences of the bee-keeper. When ⅞ deep, and the width of the hive, the floor-board slants upward from front to rear, permitting the hive itself to sit perfectly level.

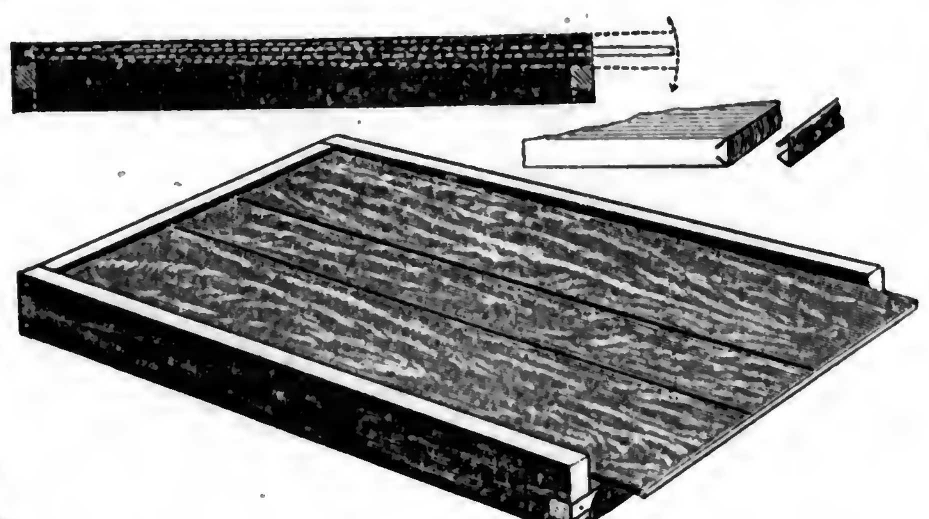

Fig 501.—Designated as A. (Patent Pending)

he floor proper is made up of three pieces, the ame as in the Danzenbaker cover. The side rails nd ends are made 2⅝ inches deep—deep enough make a hive-stand and bottom-board combined. Aside from the fact that this entrance can be in-ased or diminished at will at any time accord- .to the season, the tilting floor-board can be oved entirely, thus leaving the whole bottom n as well as the entrance. By nailing wire under the bottom and across the entrance, secures one of the nicest arrangements for ing or moving bees ever devised, because it s three inches of space under the frames. In- we shipped 500 colonies from Medina to with such a bottom-board, without the loss single colony, and the bees went through in ne ndition. The illustration will make its man- ma of construction easily understood.

ell pleased are we with this bottom-board tha e furnish it regularly with all of our hive equi nts unless some other style is specified.

d-style B Bottom Made Reversible.

Th s a reversible double-surface bottom-board. It mde up of one or two pieces of ⅞ stuff, tongued and grooved, and cleated at the ends. On one side the side rails and end rail make a space under the frames ⅞ deep. On the other side the space is only ⅜. The user has the option of a ⅞ or a ⅜ entrance, and he can at will change from ⅜ to ⅞ in a heavy honey-flow, or for the

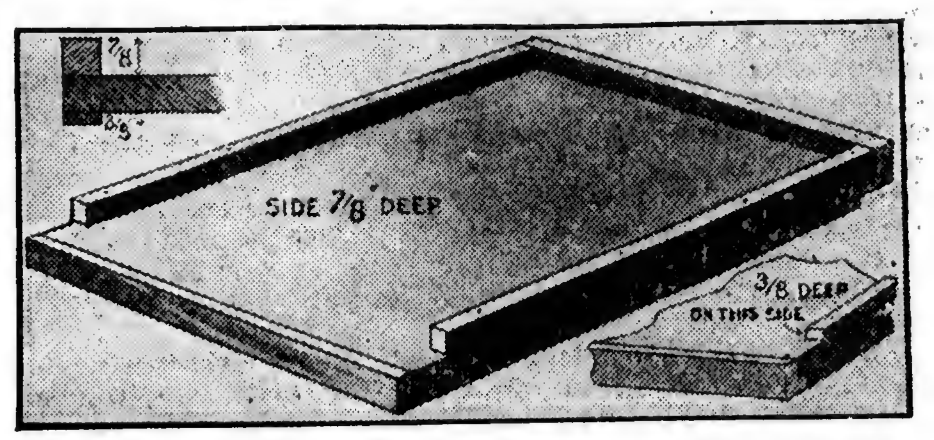

Fig. 405—Designated as B.

purpose of putting the bees in the cellar. We furnish this bottom-board as an option with any of our combinations in place of the regular Danzenbaker.

Combined Bottom-board and Hive-stand.

We put this out two years ago, and it has proven to be so popular that we are glad to recommend it as being one of the best bottom-boards we have ever sold. The floor proper slants from the rear to the front, making besides a wide

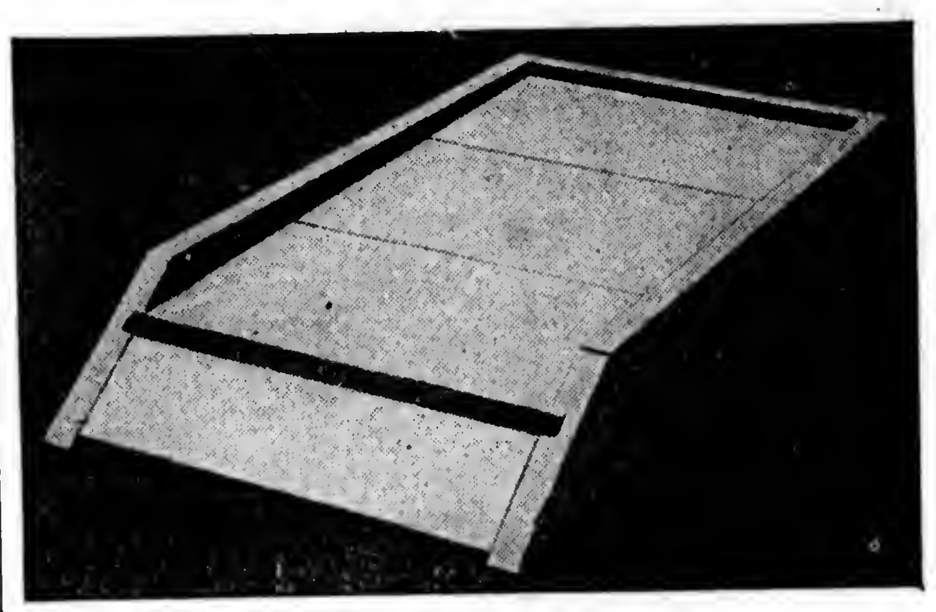

Fig. 303.—Designated as C.

entrance, a space under the frames that varies all the way from ⅞ at the front to ⅜ inch at the rear. With this device it is not necessary that the hives should stand slanting forward. If the hive is set level the water will run out at the entrance. Hives with this style of bottom-board cost 5 cts. extra, and are designated C in place of A; but even if they do cost 5 cts. extra, they save the expense of hive-stands, bricks, or pieces of scantling, for this bottom-board can be set right on the ground.

Hive-stands.

For those who use the Danz. or B bottom-boards we manufacture what we call our hive-

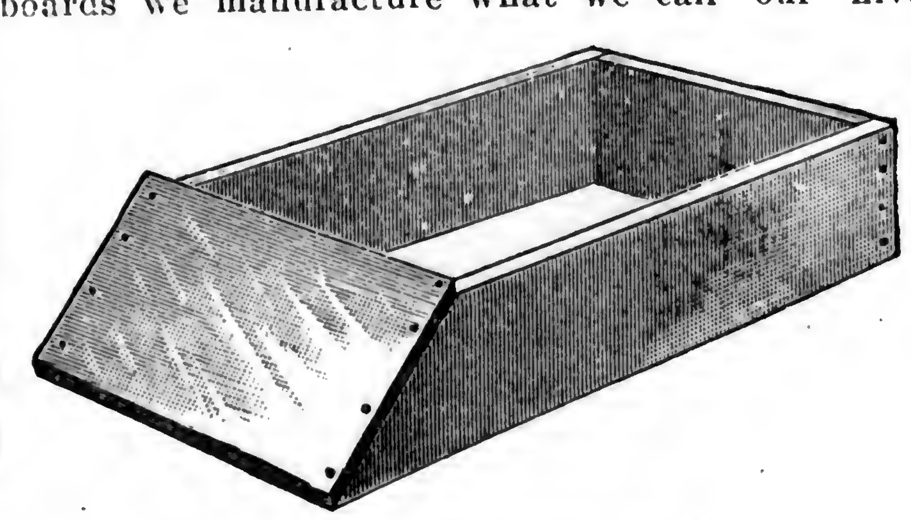

Fig. 6.—Designated as H.

stand. No such bottom-boards should be placed directly on the ground. The dampness, besides being detrimental to the bees, rots the hive-bottom, and when the hive stands clear down on the ground, it is not as convenient to work it as when it is placed up five inches above. The hive-stand shown in Fig. 6 is made of cheap lumber, and is so constructed as to provide for a convenient alighting-board, with a slanting runway clear up to the entrance. This feature in cool weather will

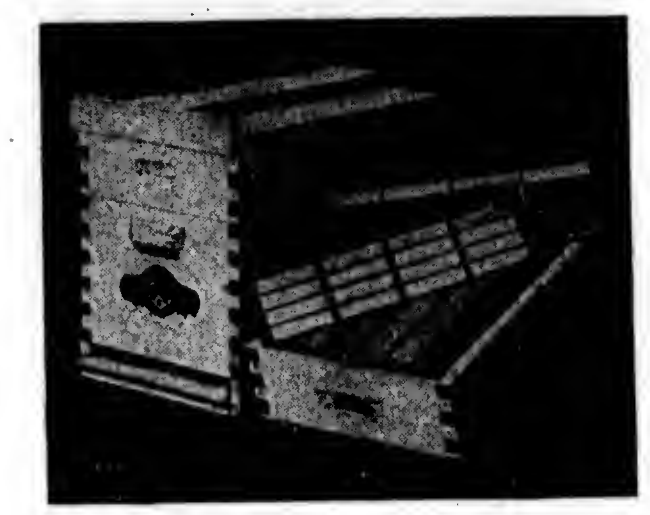

Fig. 505.—AE64P—8 Hive.

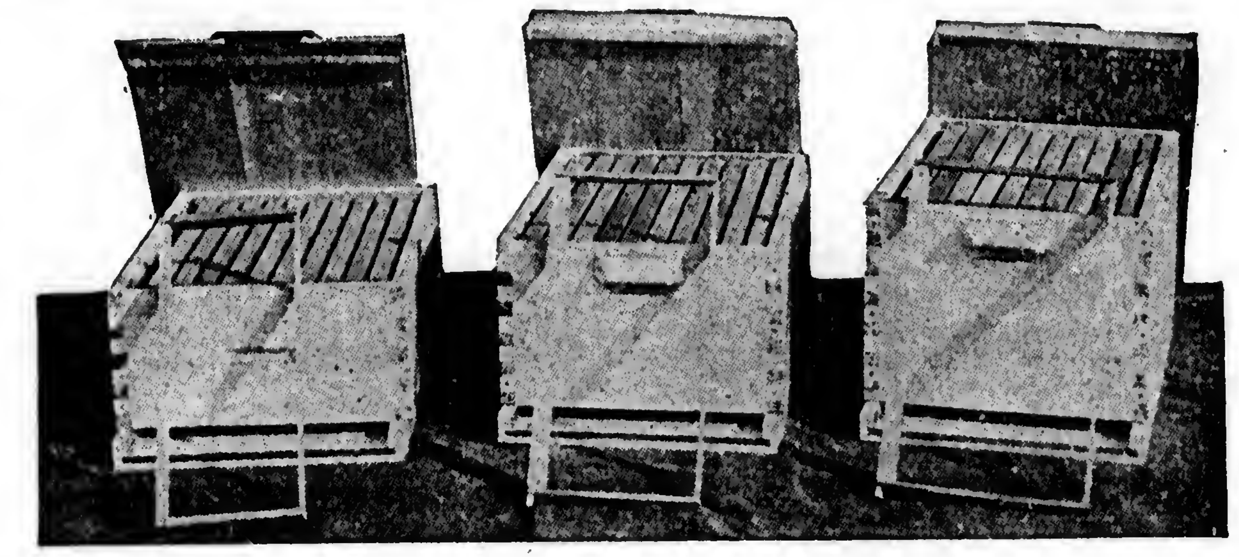

Fig. 312.—Danz. AD5 Hive; A 5 10 Hive; AEJ5–10 Deep or Jumbo.

more than pay for the whole hive-stand in the saving of bees that would otherwise be chilied to death.

Hives Proper.

We furnish some six or eight different styles of brood-nests, all lock-cornered. First we have the eight and ten-frame Langstroth, both of which are standard, because used more largely than anything else. But some prefer shallower hives. For such we know of nothing better than the Danzenbaker with 7½-inch closed-end brood-frames.

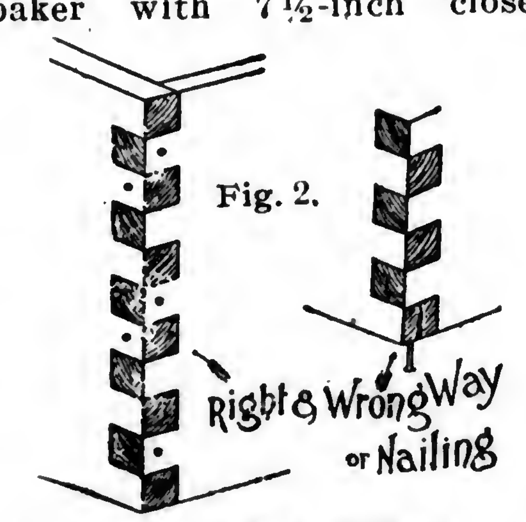

Fig. 2.

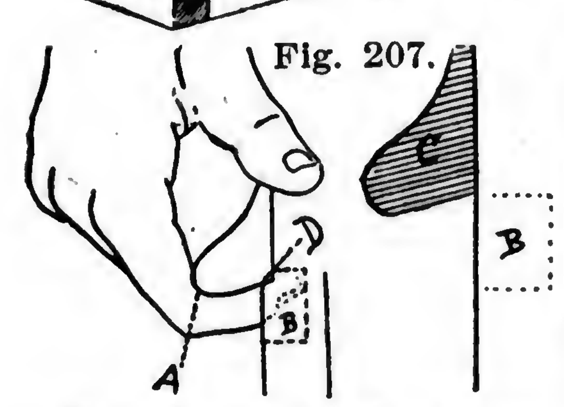

Fig. 207.

Handhole Cleats. 75c per 100.

others who feel There are still that a Langstroth frame is not deep enough. For such we furnish a brood-body the same width and length as the standard ten-frame Langstroth hive to take the regular Hoffman frame, Langstroth length, but 2½ inches deeper. Three of the hives are shown in the illustration above. Besides these we furnish eight and ten-frame double-walled or chaff hives for Langstroth frame, any one of which will take in any of the super combinations shown in this catalog. All of our hives except the Danzenbaker are supplied with hand-holes and hand-hole cleats, the two last being nailed on the front and rear. These, in connection with the hand-hole, make a most satisfactory handle by which the hives can be lifted and manipulated in any way possible.

The top and bottom ends of all our hives and supers are planed smooth by running through a sizing machine.

But the important feature of all of our hives is that they are dovetailed, or, more properly speaking, lock-cornered. This is by all odds the strongest and most durable hive-corner that was ever put out. We were the first to introduce this feature to the trade; and so popular has it become that it is now used universally by all bee-keepers who use up-to-date hives: and the Root dovetailing, done on Root machinery, we let speak for itself.

Another special feature of our hives is the clearness of the stock. Very few knots appear in our hive lumber. It is the finest and best Canada or Michigan white pine.

Supers for Comb and Extracted Honey.

That part of the hive which comes above the brood-nest or brood-frames, designed to receive the surplus honey, either comb or extracted, is called the "super." Those that we make are the same that we have sold for a number of years, for the reason that little or no change has been found necessary. The form of comb-honey super that we recommend is that which receives the plain section. Why any person or bee-keeper should use the old-style separator, we can not explain; therefore we recommend all of our customers who desire to produce fancy comb honey to select some one of the plain section-supers. In our own experience, honey in such sections brings a higher price almost invariably. Indeed, our trade calls for more comb honey in plain sections than we can buy.

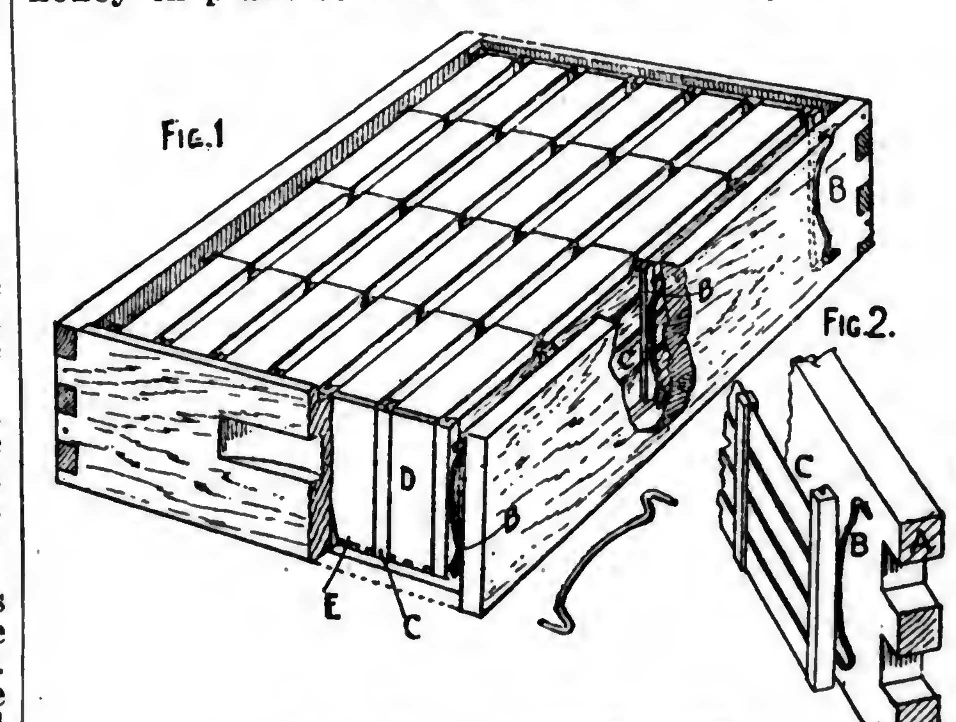

Fig. 209.—Super-springs.

Price of springs, 1c each; 75c per 100; $5.00 per 1000.

All of our supers are equipped with Danzenbaker super-springs, which cause a gentle yielding pressure upon the sections. A spring is far better than any wedge or thumb-screw, because it adapts itself to variations in climate, causing a shrinkage and swelling of the contiguous parts. No matter how much this variation may be, a bent wire will take up the gaps and keep the parts firmly squeezed together. Without springs or some form of compression the bees will chink in propolis at every crack made between the sections, separator, or fences. The result of all this is that a large amount of propolis has to be scraped off contiguous to the edges of the sections and separators. While the springs do not, of course, do away with propolis accumulations entirely, they do much to reduce the amount to a minimum, or to such an extent that many bee-keepers do not even find it necessary to scrape the sections more than a very little, especially if they are plain sections.

The manner of using the springs will be apparent from the illustration, Fig. 209. When all the sections are put in place, with separators or fences, the springs can be inserted in the manner shown. After the sections are filled, the springs can be removed, when everything in the super will be loose.

We are prepared to furnish the old-style so when called for at the same price.

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The Fence and Plain-section System.

During the fall of 1897 we introduced to the bee-keeping world the cleated separator and the no-beeway section—that is, sections without insets, having sides, top, and bottom plain, and all of the same width throughout. We made these our leaders for 1898, 1899, 1900, 1901, and 1902, and the five seasons' tests were so satisfactory that we see little to change for the year 1903.

For convenience we call the cleated separator the fence, which it greatly resembles, and the box without beeways the "plain" section, because the edges are plain all around. It will be apparent that, if there are no beeways or openings in the

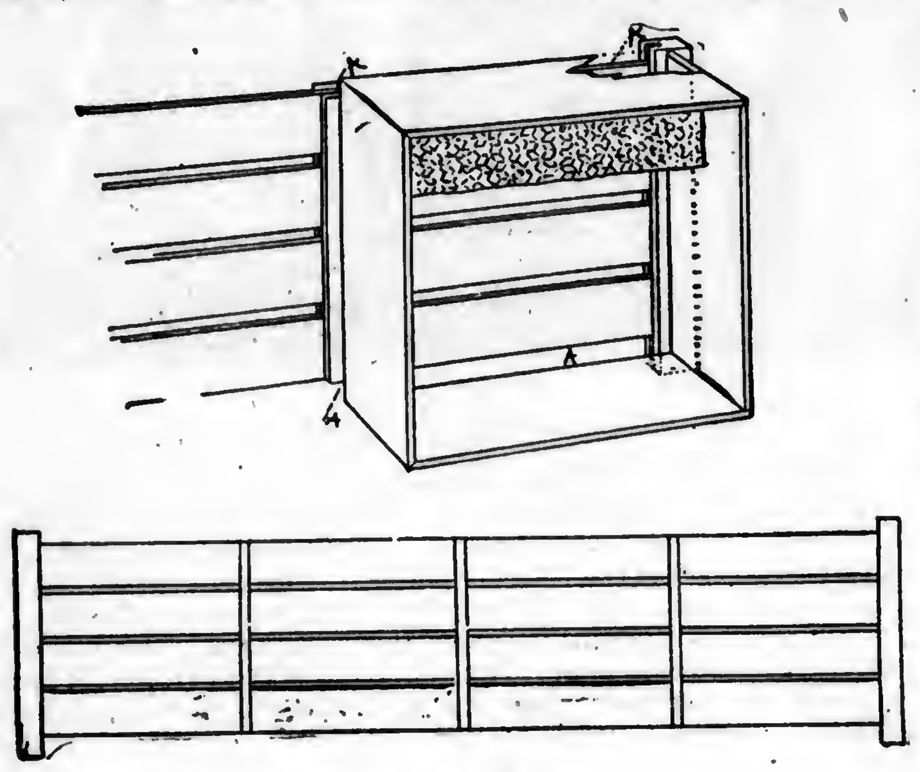

Fig. 213.

sections, the separators must be so constructed as to provide for the necessary bee-space; and this is best accomplished by nailing (or, better, gluing) cleats transversely, and at intervals equal to the width of the section, across the separator; and, for reasons that we shall presently enumerate, the other parts should be made up of a series of slats rather than one wide thin piece of veneer.

The fence and plain section are no experiment. Besides the fact that this is the sixth season we have sold these goods, they have been used quite extensively for a period of ten or twelve years, in a quiet way, by prominent bee-keepers all over the land, who, realizing that such sections, when filled with honey, looked plumper and nicer, scraped easier, brought the highest price, and took smaller shipping-cases to case it, naturally enough were in no hurry to invite competition by telling the world about them. And right here we will take these points seriatim:

1. The beeways provided by the fence are much more ample than those in the old-style section with

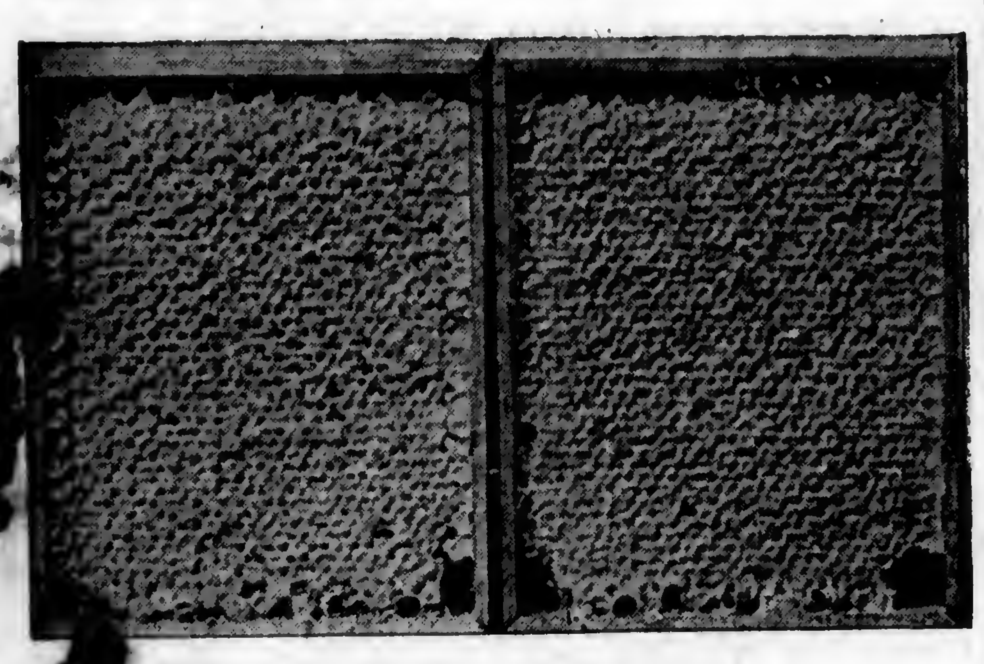

Fig. 311.—Honey in Plain Sections.

This shows that plain sections or those without beeways appear fuller because the honey comes up almost even with the edges of the section.

its narrow openings (see A A, in Fig. 213). In the fence the opening reaches clear across the section and part way up and down the upright edges. In the old-style section the opening reaches out about three-fourths the way across.

2. While the fence may be a little more expensive than the sawed separator, the new article, from the very nature of its construction—a series of slats, held together by means of transverse cleats glued at the factory, is very much more durable, and will outlast the ordinary separator by several years, and in the end will be far cheaper.

3. A great many used to prefer, and still prefer, supers without separators, claiming that, where the bees have the freedom to pass from one section to another, they enter the sections more readily and fill them better. The fence not only allows the bees to have the same lateral communication from section to section, but, what is of more importance, prevents the bulging of the combs. With the sawed wood separators and old-style sections, the bees are practically divided off into a lot of little clusters; whereas, by the fence system one large cluster is united together, so that the combined heat of the whole super is thereby secured.

4. Plain sections, when filled with honey, in some markets bring a better price. The very fact that there are no beeways to stick out, leaving jutting corners, gives the section a fuller and plumper appearance.

5. Sections with plain, straight edges, and without insets, can be more easily scraped than those having notches and beeways to gouge down into and out of with a scraping-knife. A case-knife will, with one sweep, clean almost the whole four edges of the plain section at once.

6. While the plain section, 4¼ square, is only 1½ inches wide (because the bee-spaces are provided for in the fences), yet it holds nearly as much honey as the old-style square 1⅞-inch section with its beeways when used with plain separators. As a natural result, a shipping-case will hold from 15 to 25 per cent more honey of the plain-section kind, thus effecting a substantial saving in cases to the bee-keeper.

7. Last but not least, the price of plain sections is 25 cts. per 1000 less than the old style because they require less material to make them.

Dov'd Supers with Fences and Plain Sections.

The five leading supers in which we use plain sections and fences are designated in the table of prices as P, TPIL, and M. The first mentioned shown in Fig. 308, takes the plain 4¼ section 1½ inches wide.

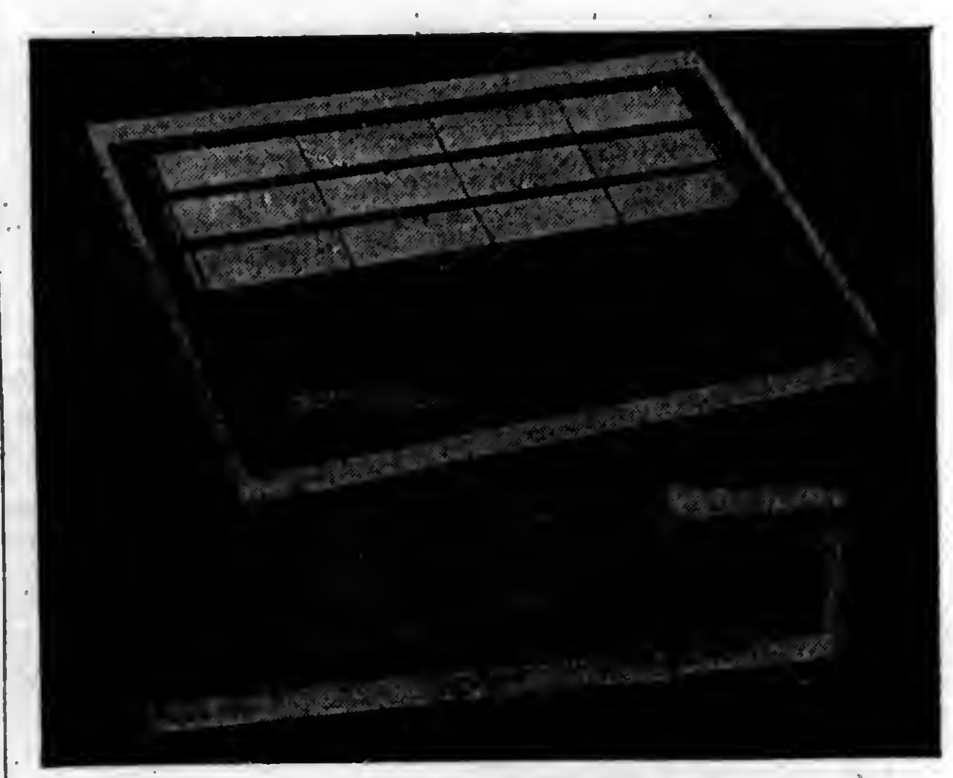

Fig. 308.—Designated as P.

There are six holders and seven fences in 8-frame super. This provides for a fence between each row of sections and a fence between each of the outside rows and the super sides themselves. This arrangement practically secures almost as good filling in the outside rows as in the center, for it brings in a large cluster of bees around on both sides of the outside fences: and this cluster or wall of bees is very necessary to provide for sufficient heat for comb-building and capping of the cells. By the old plan the sections abutted up against the cold super sides, leaving very little room for the bees to cluster in, and for that reason very little animal heat could be generated.

When these supers are used in connection with the bottom-boards, having a deep space under the brood-frames, as explained under "Bottom-boards," the bees are compelled to crawl to the rear or to the sides of the hive, with the natural result that they will deposit their honey in the first available cell. These cells will be, of course, in the outside rows of the sections. We thus in effect carry out the Pettit plan of producing comb honey; and where we have had reports from those who have tried the method faithfully, good results have followed.

Three springs are used in each one of the supers—one in each end and one in the center, bearing against the center cleats.

The Danzenbaker Super for Comb Honey.

This we consider to be the best comb-honey arrangement of anything we manufacture and sell. It takes the 4x5 1⅜ plain section—a section that when filled brings a better price in the markets where it is best known, as a rule, than any other.

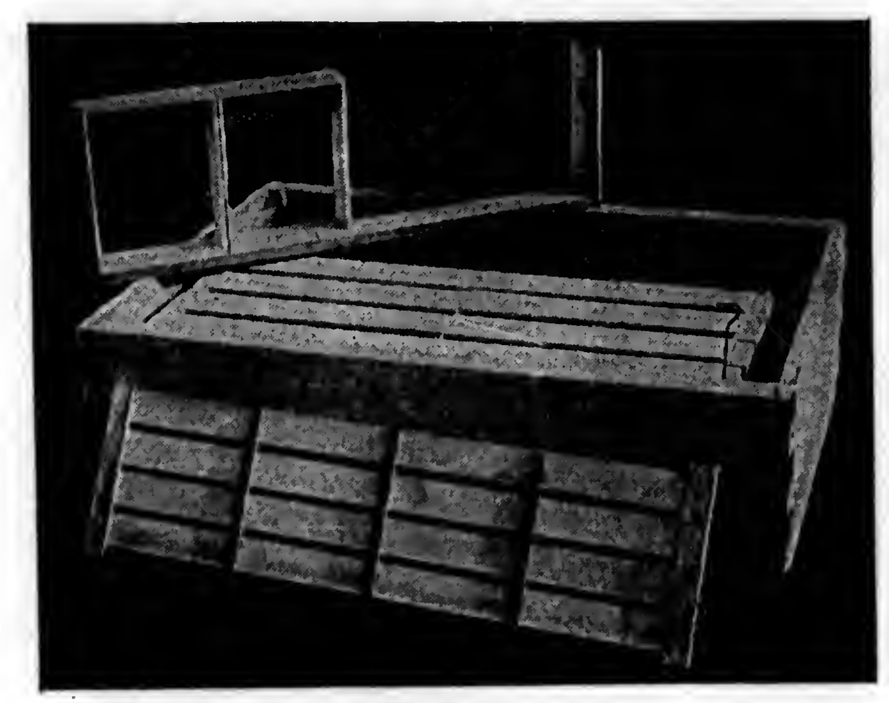

Fig. 409.

The general design of the super itself is such as to effect a better filling of the sections. Why this is so we are not able fully to explain, unless it is because of protection afforded to the ends and sides of the super, and because the bees prefer to fill a deep section rather than a square one. The section-holders themselves are an improvement also over our other section-holders, chiefly in the manner in which they are supported by means of pins and hanger-cleats. So much warmer and better constructed is this super than the one we have hitherto advertised under the name of Ideal, taking tall sections 3⅝x5, and another eight-frame super taking 4x5 sections running crosswise, that we do not now show either one of them in this connection, but recommend the Danzenbaker instead. We are prepared, however, to furnish them at the prices listed on another page; but experience has shown that a 4x5 section in the Danzenbaker super, as we make it, is better filled out than 3⅝x 5 section in the Ideal super. We furnish the Danzenbaker in both the ten-frame and eight-frame widths; but the ten-frame is much better than the eight-frame because it permits of the use of a fence on each outside row, where the eight-frame does not. But on special order to the factory we are prepared to furnish the eight-frame super ¼ inch wider, so that a fence can be put in on both sides.

The Danzenbaker super can be used on any of our hives, either eight or ten-frame Langstroth depth or Jumbo depth.

Tall Sections v. Square Ones.

1. Weight for weight a tall section presents a larger surface of comb than the average square one. In the 4x5 tall plain section, for example, 1⅜, we have about the same actual weight as the 4¼ square plain by 1½; and yet, as will be seen by the engraving, the former looks to be the larger. As a result, the tall box brings in some markets anywhere from one to two cents more per pound.

2. By long association we have come to like the proportion of objects all about us that are taller than broad. Doors and windows of their present oblong shape are much more pleasing than they would be if they were square. Nearly all packages of merchandise, such as of drugs and groceries, are oblong in shape—that is, taller than broad. To further cater to this taste, brought about by long association with the common objects round about us, the tall section was introduced; and outside of its relative appearance of bigness as compared with the square box, very many consider the tall one much more pleasing.

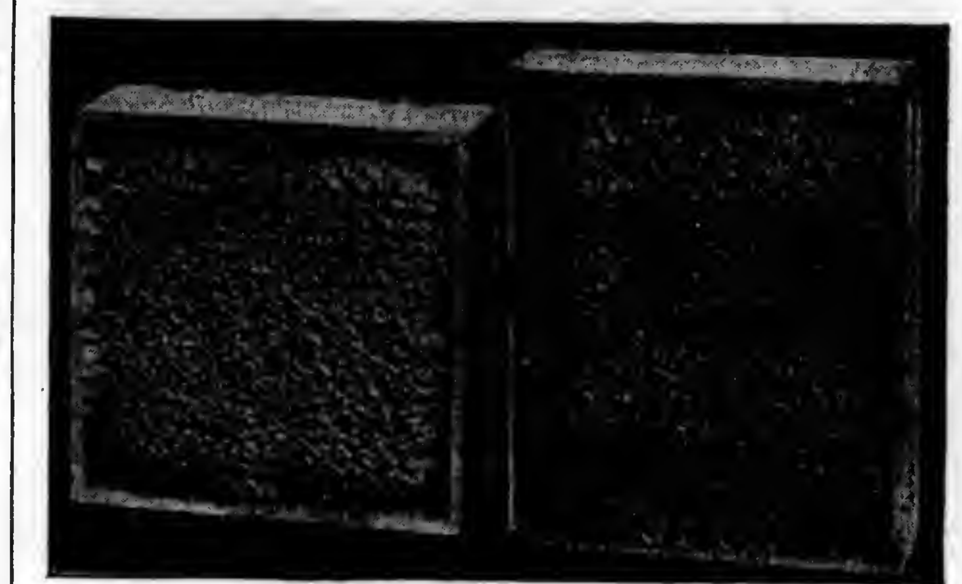

Fig. 310.

3. A tall section holding approximately a pound weight permits of the use of a thinner comb—a comb more easily approaching combs in nature. Thin combs are said to be filled out sooner, and are better filled; and it is also thought that honey ripens better in them.

4. Mr. R. C. Aikin, one of the closest observers in all beedom, lays it down as a rule that *"in comb building the downward progress exceeds the sidewise in the proportion of about three to two.* . . . . If, then, comb construction goes on in this way, a section as wide as deep will be finished down the center before it is at the outer edges." A tall section, then, more nearly conforms to the natural instincts of the bees.

5. A greater number of tall sections holding approximately a pound can be accommodated on a given hive surface.

6. A tall section will stand shipping better, because the perpendicular edges of contact of the comb itself are greater than in a square box.

Dovetailed Super with Slotted Section-holder.

This is one of the best supers sold for the use of old-style sections having beeways. It is constructed on the same general lines as the P super

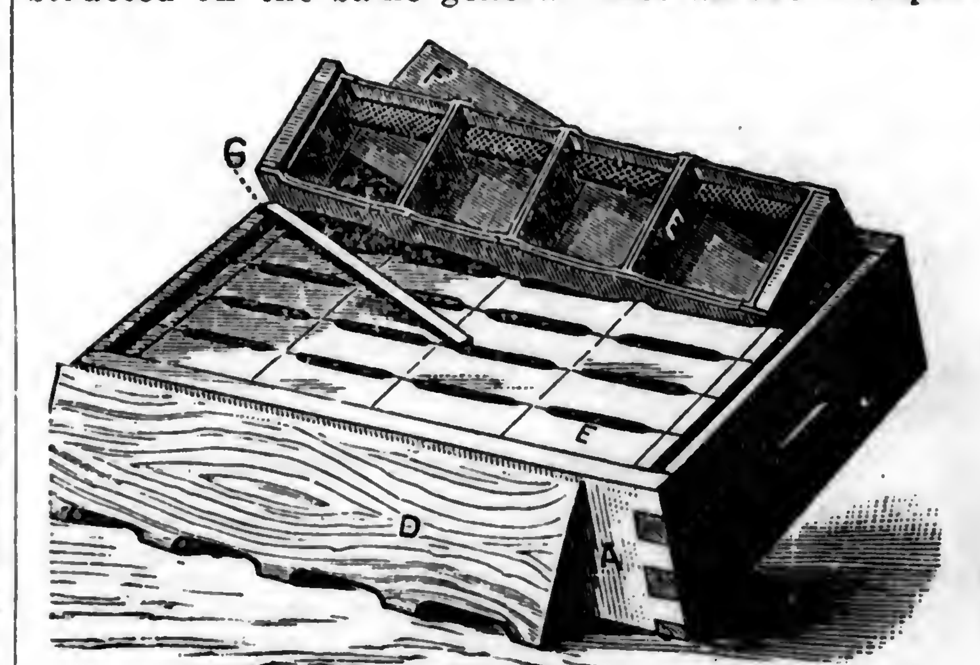

Fig. 8.—Designated as S.

for plain sections, with this exception: that, instead of fences, we use wood separators (or slat separators), beeway sections, and section-holders having bottom-bars scored out to correspond with the bee-ways in the sections.

Hilton Dovetailed T Super.

This form of super is very popular with a large class of bee-keepers, and it is also used by some of the most extensive honey-producers in the world. It can be made to take plain sections and fences, or old-style sections and sawed separators (or slat

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separators). We also make it to take 4½ sections, 7 to the foot beeway, or 4¼ beeway section 1 15-16, as shown in the cut above. We can furnish it with thumbscrews or super springs, the same as are used in our other supers. We also make the T super with *stationary* tins, as shown in the cut above, or *loose*, as preferred by Dr. Miller. When

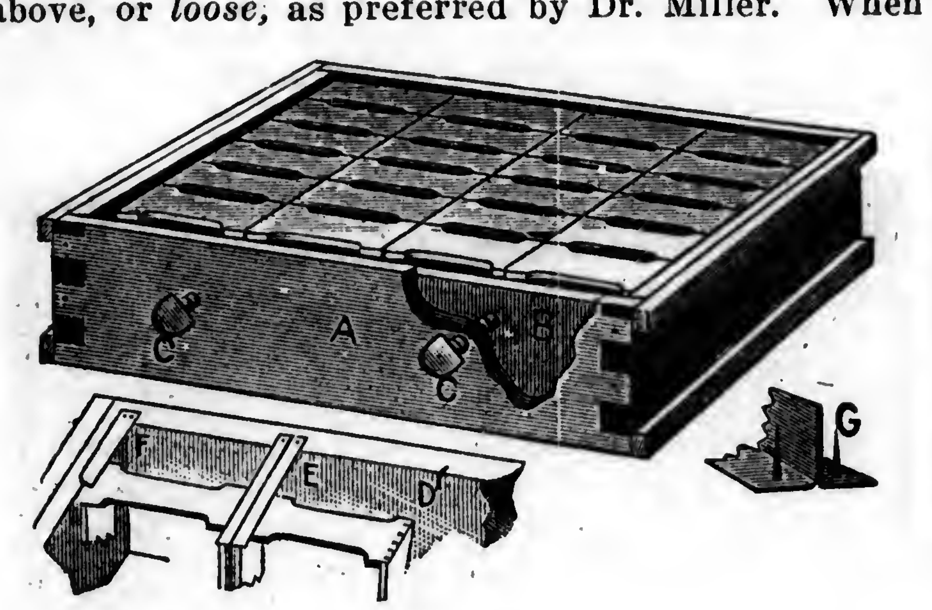

Fig. 42.

the super is made to take plain sections and fences, no change is required in the super itself, as a special fence is made to fit the super. When asking for this, call for T fence.

This super in any combination is sold at the same price as our other standard super, P, S, I, or L. When used with beeway sections it is designated as T S; or with plain sections and fences, T P. If thumb screws are not specified we'll send the springs.

Slat Separator for Old-style Sections.

Both S and T supers take slotted sawed separators. We can supply in place of them, on option, slat separators without cross-cleats, to go with old-style or beeway sections. These separators are made up of four slats 13-16 inch wide, and are bound together at the ends by folded U-shaped tins.

We have no hesitancy in recommending these in preference to the solid separator shown at D in Fig. 8. While this slat separator and old-style-section combination will not be equal to the plain section and fence, yet it will give some very satisfac-

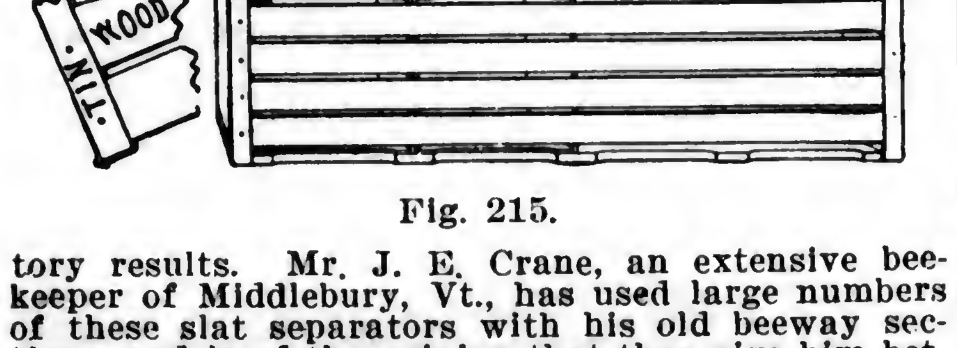

Fig. 215.

tory results. Mr. J. E. Crane, an extensive bee-keeper of Middlebury, Vt., has used large numbers of these slat separators with his old beeway sections, and is of the opinion that they give him better filled boxes. As in the case of fences, the bees have free communication back and forth, and if there is anything in this inter-communication idea the slat separator gives it.

In calling for this combination in S or T supers, ask for slat separator in place of the sawed at same price.

Dadant Shallow Extracting-super.

In raising comb honey it is generally considered best to give the bees as much room as they can occupy at once, usually one super. Considerable heat is required in comb-building and the work of the hive, and if given only the amount of room they can easily occupy they will work with better effect than if given twice as much room as they need. The same argument will apply in securing extracted honey; but as the full-sized frames are generally used for this purpose, it was not so easy to contract the amount of space to the space of an ordinary super. For weak colonies, also, the shallow frame is much the better. For this reason there is a demand for shallow extracting-supers. To meet this demand we are making extracting-frames 5⅜ inches deep, outside measure, like the full-depth Hoffman frames, without a comb-guide, and giving nearly five inches in depth of comb surface. By putting eight of these in a deep super (the super used to hold 4x5 sections) with follower, and spaced 1⅜ inches from center to center, you will have an extracting-super. There will be more frames to handle; but the uncapping-knife will easily reach clear across the frame, and the cappings can be pared off very rapidly. We offer these hives in table on next page as No. AE58 or AE69.

What Hives and Supers to Select.

A good deal will depend upon the locality where one expects to keep his bees, and the kind of honey called for by the local market. In Texas, many of the Southern States, in Cuba, and in general in warm climates where seasons are long, and extracted or chunk honey is called for very largely, the ten-frame Dovetailed hive, Langstroth depth, with Hoffman frames and extracting-supers, is the general favorite. In the eastern and northern portion of the United States, where comb as well as extracted is called for, the eight-frame Dovetailed hive with Hoffman frames and P super has been used very largely. It is well adapted to the producing of comb honey, and with an extra hive body it permits of producing either comb or extracted, and, what is of considerable importance, it is standard.

But where one desires to produce a very fine quality of comb honey in deep sections, and in localities where the seasons are short, and the market demands fancy goods, we know of nothing better than the Danzenbaker hive with closed-end reversible frames and the Danzenbaker super. The hive is the same width and length as the regular Langstroth Dovetailed, but is 1⅝ inches shallower. This makes the hive of equivalent cubic capacity to the eight-frame Dovetailed, but is better than that hive for comb honey because the brood-nest is shallower, making a larger super surface for the sections and bringing the brood itself closer to the sections. The fact that the Danzenbaker frame is closed-end and shallower, has the effect of forcing nearly all of the honey out of the brood-nest; and what does come in is forced into the sections, where it will bring the highest market price. It is generally recognized that a closed-end frame makes a warmer brood-nest. With such a brooding-compartment the bees are in position to rear large quantities of brood—so much of it, in fact, that there is room for little or no honey below. Those who have tested the Danzenbaker hive and super to any considerable extent are loud in their praise. A number of our customers who have tested this hive in connection with others, positively assert that they not only can get a finer grade of comb honey but more of it. One who has abandoned the Langstroth hive for the Danzenbaker goes so far as to say that he can get double the amount; while others, perhaps more conservative, claim that they will secure just as much, but a better quality—more of the fancy honey. It is not claimed that this hive will produce more honey in the aggregate than another one, but that it will put more of it in the supers. Other hives would have a great deal in the brood-nest and a corresponding lesser amount in the supers.

But there are those who, desiring to keep down swarming, and wishing to produce nothing but extracted, will have nothing but a very large hive with a large frame. To meet the wants of such we have designed a brood-nest that is the same width and length as the regular ten-frame Dovetailed hive, but 2⅛ inches deeper, which we call our Jumbo. This makes a brood capacity about the same as the Quinby, which is used so largely and successfully by the Dadants, of Illinois. It has equivalent capacity to a twelve-frame Langstroth, but the latter requires a special odd-size cover, bottom-board, and super. This makes a fearful nuisance in a yard where the Langstroth or Dovetailed hive is in use. With our ten-frame Jumbo having frames two inches deeper than the regular, a customer can use the regular supers, covers, and bottom-boards that go with the regular standard ten-frame Dovetailed hive. There is, in fact, nothing odd-sized about the Jumbo but the frame, and that is regular save in the one point of depth, and in emergency one can use Langstroth frames in it the same as the deeper ones.

We believe we have a sufficient variety and equipment of hives and frames to suit every taste and every locality. If none of the hives here listed and described fill the notions and requirements of any of our friends, we are prepared to make special hives; but orders for such should be sent to us comparatively early in the season, otherwise there is likely to be delay.

TABLE OF PRICES OF COMPLETE HIVES.

If you should want a different cover or bottom than the one listed in the regular combination, simply substitute the letter which designates the cover or bottom wanted in the combination or hive ordered. For instance, all the hives are regularly furnished with Danz. (A) bottom and Excelsior (E) cover. If you want the B bottom and Gable cover use the letters BG. instead of AE. In like manner any change desired may be indicated.

In ordering use the designating number or letter which follows on the same line the description of the hive or part wanted. Carry out the price extended on the same line under the quantity required as given.	Designating Letter.	Eight-frame: Nailed and Painted.	Eight-frame KD in flat, price in lots of 1	5	10	25	Weight of Ten	Ten-frame: Nailed and Painted.	Ten-frame KD in flat, price in lots of 1	5	10	25	Weight of Ten.
1-story hive, no super or upper story—Fig. 504													
Without foundation starters	AE5	1 60	1 20	5 25	9 90	23 00	200	1 70	1 30	6 00	11 00	25 75	215
With foundation for 1-inch starters	AE6	1 70	1 25	5 50	10 40	24 25	200	1 80	1 35	6 25	11 50	27 00	215
1½-story hive for extracted honey—Fig. 510													
Without foundation starters	AE58	2 15	1 65	7 25	13 50	31 25	270	2 30	1 80	8 25	15 00	35 00	295
With foundation for 1-inch starters	AE69	2 35	1 75	7 75	14 50	33 75	270	2 50	1 90	8 75	16 00	37 50	295
2-story hive for extracted honey, see Fig. 511													
Without foundation starters	AE55	2 50	1 90	8 35	15 70	36 50	320	2 65	2 05	9 50	17 40	40 75	350
With foundation for 1-inch starters	AE66	2 70	2 00	8 85	16 70	39 00	320	2 85	2 15	1000	18 40	43 25	350
1½-story hive for comb honey, no sections or starters, for 4¼×1⅞ beeway sections	AE52S						270						290
For 4¼×1½ plain sections	AE52P	2 15	1 65	7 25	13 50	31 25	260	2 30	1 80	8 25	15 00	35 00	285
For 3⅝×5×1½ plain sections	AE52I						275						295
For 4×5×1⅜ plain sections in Danz. super	AE52M	2 30	1 80	8 00	15 00	35 00	290	2 45	1 95	9 00	16 50	39 00	315
1½-story hive for comb honey, complete with sections and foundation for 1-inch starters													
With 4¼×1⅞ beeway sections Fig 507	AE64S						280						305
With 4¼×1½ plain sections—Fig. 506	AE64P	2 50	1 85	8 25	15 50	36 25	270	2 65	2 00	9 25	17 00	40 25	295
With 3⅝×5×1½ plain sections	AE64I						285						310
With 4×5×1⅜ plain sections—Fig. 503	AE64M	2 65	2 00	9 00	17 00	40 00	310	2 80	2 25	1025	18 50	44 00	335
2-story hive for comb honey without sections or foundation starters.													
For 4¼×1⅞ beeway sections	AE522S						340						365
For 4¼×1½ plain sections	AE522P	2 70	2 10	9 25	17 00	39 50	320	2 90	2 30	1050	19 00	44 00	355
For 3⅝×5×1½ plain sections	AE522I						350						375
For 4x5x1⅜ plain sections in Danz supers	AE522M	3 00	2 40	1075	20 00	47 00	360	3 20	2 60	1200	22 00	52 00	415
2-story hive for comb honey with sections and foundation for 1-inch starters:													
With 4¼x1⅞ beeway sections	AE644S						360						395
With 4¼x1½ plain sections	AE644P	3 30	2 45	1100	20 50	48 25	340	3 50	2 65	1225	22 50	53 00	375
With 3⅝x5x1½ plain sections	AE644I						370						405
With 4x5x1⅜ plain sections in Dz. supers	AE644M	3 60	2 75	1250	23 50	55 75	420	3 80	2 95	1375	25 50	61 00	455
BOTTOMS, COVERS, SUPERS, and HIVE PARTS													
Danz. bottom or floor board with rim—Fig. 501	A	30	20	90	1 70	4 00	35	32	22	1 00	1 90	4 50	37
Bottom, ⅞-in. boards, reversible—Fig. 405	B						50						54
Combined bottom and stand—Fig. 303	C						40						43
Danz metal bound flat cover, made—Fig. 500	D						42						45
Excelsior cover, shown in Fig. 301	E	40	30	1 25	2 40	5 50	47	43	33	1 50	2 70	6 25	52
Flat cover, double, paper covered—Fig. 402	F						47						52
Gable cover, ventilated, shown Fig. 404	G						53						60
Hive-stand to use with A or B bottom—Fig 6	H	25	15	65	1 20	2 75	45	25	15	65	1 20	2 75	48
Metal-roofed telescope cap, 11¼ inches deep, to fit over hive and super	K	65	50	2 40	4 60	10 50	75	68	55	2 55	4 90	11 50	80
Metal-bound super-cover, ⅜ inch thick, to use with telescope cap		15	15	70	1 30	3 00	15	15	15	70	1 30	3 00	15
Empty hive body, 9½ deep, with tin rabbets		50	40	1 80	3 40	8 00	80	52	42	1 90	3 50	8 50	85
Body with frames only—no division-board								90	70	3 10	5 80	13 50	125
Body with frames and division-board	5	90	70	3 10	5 80	13 50	120	95	75	3 50	6 40	15 00	130
Body with frames, inch foundation-starters, and division board	6	1 00	75	3 35	6 30	14 75	120	1 05	80	3 75	6 90	16 25	130
Body with frames wired, full sheets found'n	7	1 70	1 25	6 00	11 30	27 25	125	1 95	1 40	6 75	12 90	31 25	140
Jumbo body with frames and division-board	J5	1 00	80	3 60	6 80	16 00	140	1 10	85	4 00	7 40	17 50	160
Jumbo body with frames and inch fdn. start's	J6	1 10	85	3 85	7 30	17 25	140	1 20	90	4 25	7 90	18 75	160
Shallow super empty with flat tins only		30	20	90	1 70	4 00	40	32	21	95	1 80	4 25	42
With section-holders, separaters, followers, and springs for 4¼ beeway sections	2S	55	45	2 00	3 60	8 25	70	60	50	2 25	4 00	9 25	75
With plain section-holders, fences, bevel cleats, and springs for 4¼ plain sections	2P						60						70
2S super with 1⅞ beeway sections added	3S	70	55	2 50	4 60	10 75	80	75	60	2 75	5 10	11 75	90
2P super with 1½ plain sections	3P						70						80
2S with beeway sections, starters Fig. 8	4S	80	60	2 75	5 10	12 00	80	85	65	3 00	5 50	13 00	90
2P with plain sections, starters—Fig 30[illegible]	4P						70						80
Deep Supers, empty with flat tins only		30	21	95	1 80	4 25	45	33	22	1 00	1 90	4 50	48
With slats and I fences	2I	55	45	2 00	3 60	8 25	75	60	50	2 25	4 00	9 25	80
With slats and L fences	2L						75						
2I with 3⅝x5x1½ plain sections	3I	70	55	2 50	4 60	10 75	85	75	60	2 75	5 00	11 75	95
2L with 4x5x1⅜ plain sections	3L						85						
2I with sections and inch found. starters	4I	80	60	2 75	5 10	12 00	85	85	65	3 00	5 50	13 00	95
2L with sections and inch found. starters	4L						85						
With shallow ext.-frames and div.-board	8	55	45	2 00	3 60	8 25	70	60	50	2 25	4 00	8 25	80
With frames and inch foundation starters	9	65	50	2 25	4 10	9 50	70	70	55	2 50	4 50	10 50	80
With hanger-cleats, Danz. sect'n-holders, M fences, springs, cleats, and wedges	2M	70	60	2 75	5 10	12 00	90	75	65	3 00	5 50	13 25	100
2M with 4x5x1⅜ plain sections	3M	85	75	3 50	6 10	14 50	110	90	80	3 75	6 50	15 00	120
2M with sections, inch starters, Fig. 409	4M	95	85	3 75	6 60	15 75	110	1 00	90	4 00	7 00	17 00	120

The L super with 4x5x1⅜ plain sections is furnished only in 8-frame size. The M. super, 8-frame size, has only six fences, as there is no room for the two outside fences used in all other supers taking fences, except as it is made half an inch wider. Hives with deep brood-chambers, or Jumbo size, will be supplied in any of the combinations at 10 cents each extra, either 8 or 10 frame. C combined bottom and stand will be substituted at 5 cents each extra. Frames in hives may be pierced and wire included at 2 cents per hive extra. If wanted add PW after the hive number, add 10 cents for each crate of five. Ten frames fill a 10-frame hive without division-board.

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Some of the Hives Priced on Preceding Page.

FIG. 504.—AE6-8 one-story Dovetailed hive.
AE5-8 same hive without foundation starters.

FIG. 506.—AE64P-8 hive for 4¼ square plain sections.
AE52P-8 same without sections or starters.

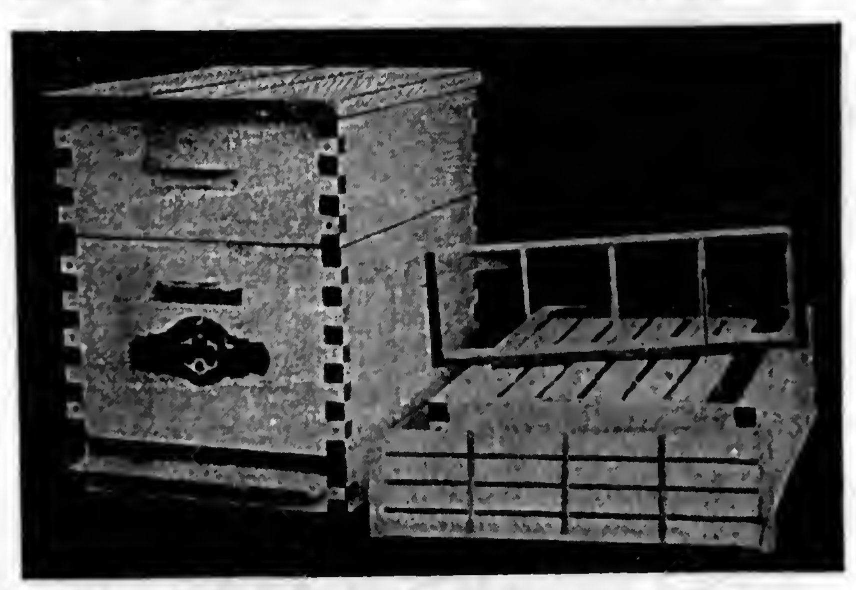

FIG. 503.—AD64M-8 hive for 4x5 plain sections.
AE52M-8 same without sections and starters.

FIG. 507.—AE64S-8 hive for 4¼ square sections slotted.
AE52S-8 same without sections and starters.

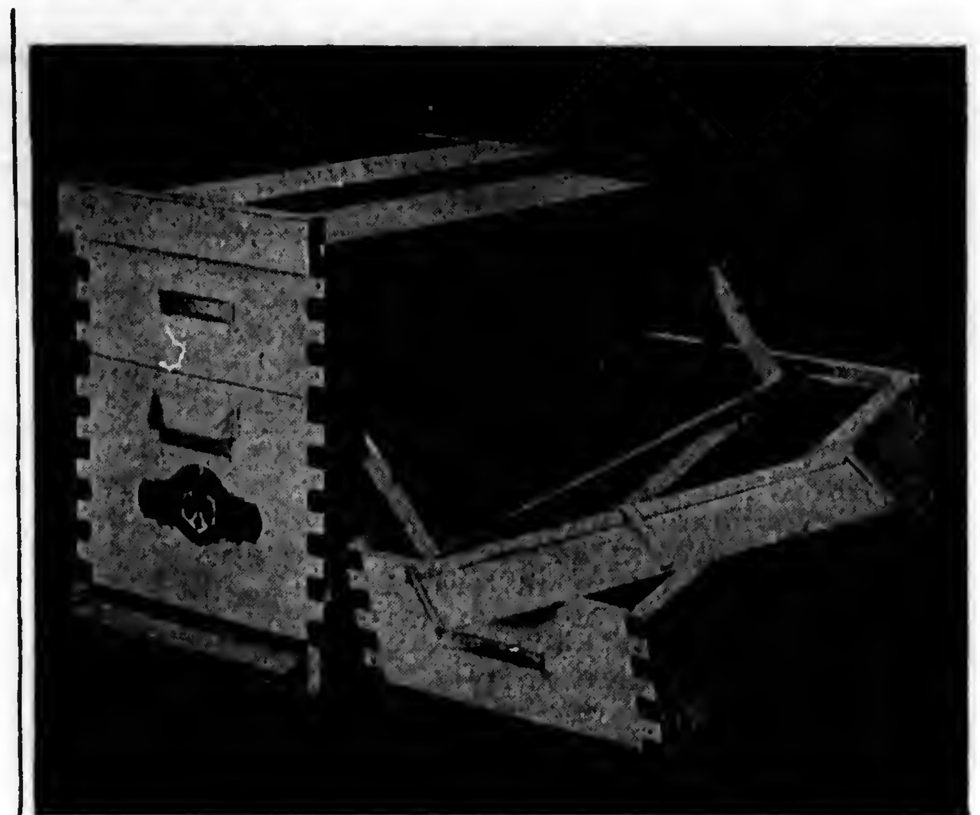

FIG. 510.—AE69-8 hive for shallow extracting-frames.
AE58-8 same without foundation starters.

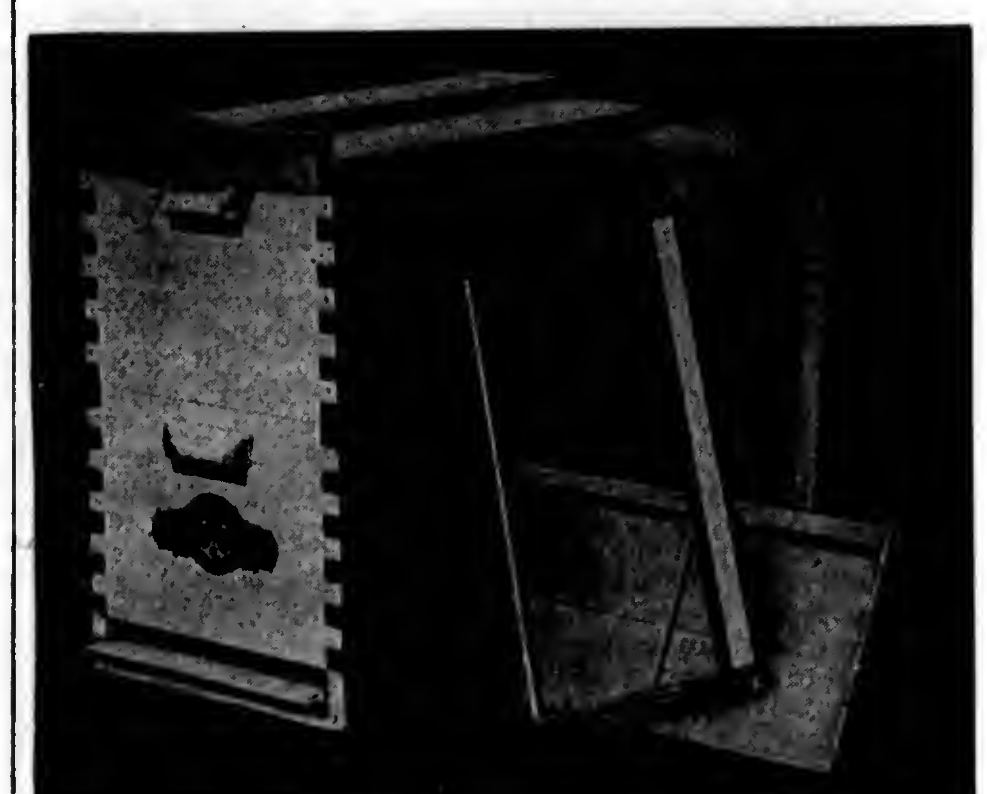

FIG. 511.—AE66-8 two-story hive for extracting.
AE55-8 same without foundation starters.

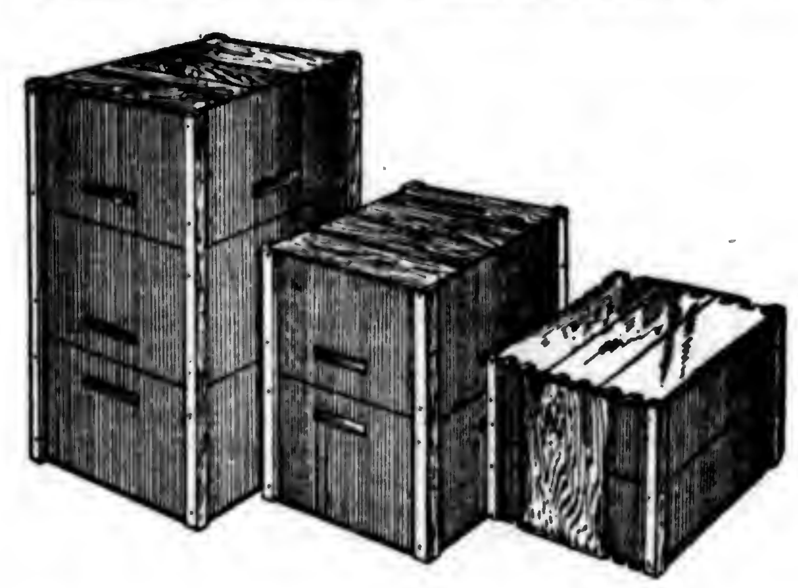

Fig. 417.—Hives Crated for Shipment.

The above shows our method of packing hives and supers for shipment. The package on the left represents five AE5 8 hives crated for shipment. Three bodies are nailed up and fastened together with corner-strips. The other two bodies, together with the five covers and bottoms, frames, and division boards are packed inside. The package next to the right shows three bodies with frames and division-boards for five packed inside of two. The package to the right shows the manner of packing supers for shipment KD. Two are put together and the sides of the remaining three form the top and bottom of the package, while the ends and inside fixtures are packed inside. All supers are packed in the same way.

Dovetailed Chaff Hive.

This is one of the very best hives we sell; and for wintering bees, or for the production of comb honey, we do not know of anything better. It is double-walled, made of ⅜ lumber, having lock corners. It is a trifle heavier than the regular one-thickness ⅞ hives, and will take the same hive-furniture, supers, brood-frames, covers, and all; and, besides, it has the advantage that it can be left on the summer stands the year round; and winter losses if directions are followed will be almost insignificant.

A good many suppose that double-walled hives are useful only for winter; but in localities subject to cool nights and a very hot burning sun during the middle of the day, they are none too warm for comb honey. Some of the best bee-keepers of the country are beginning to learn that such a hive, having well-protected supers, produces not only more but a better-filled comb honey. Our Dovetailed chaff has two inches between the walls, and when packed with chaff, sawdust, planer-shavings, or any loose material, makes a very warm brood-nest. The water-table, or picture-frame-like rim, covering the inner and outer walls, permits the use of the same supers that are used in the single-walled hives. When these supers are put on this hive and then covered with its warm telescopic cover, the bees are in position to store comb honey as they can not do in supers not so protected.

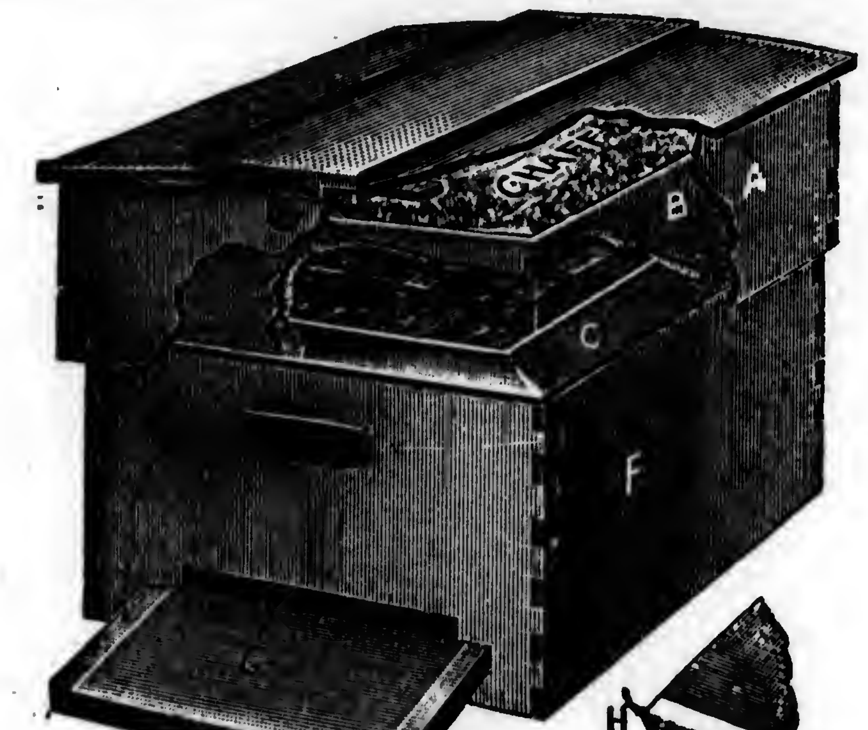

Fig. 18.

The cover is seven inches deep, and telescopes over the water-table. This effectually prevents rain from beating in. The ridge-piece is made of ⅞-inch stuff, and rabbeted on the side to receive the roof-boards. To further stiffen and strengthen it, a couple of cleats are nailed across the top on the inside. This new cover is also deep enough to still telescope over the hive with a regular super on top. We also make one extra deep (11-inch)

Instead of a large cushion (which can not be properly placed after the cover is on) we recommend and use a tray five inches deep and of a size to slip freely under the cover. To the bottom of this tray is tacked burlap, baggy enough so as to allow the Hill device to be set under. The method of packing is this: The tray is filled full of chaff, planer-shavings, or leaves. The Hill device is set on the frames under this tray of packing, and then the cover telescopes over the whole. This tray is furnished with all hives.

Dovetailed Winter Case.

There are those who, having single-walled hives, desire something which, at a slight additional expense, will convert their hives into double-walled abodes for bees during the winter. Again, some others who winter indoors wish something cheap and serviceable in the way of a protection to put over the hives after they are set out in the spring. To supply such we are prepared to furnish an outside case having the same cover and the same outside shell as go with the chaff hive described below. These are set over the eight-frame hive, and the opening at the bottom of the case (that is, the space between the hive inside and the case) is stopped up with the padded sticks. Packing material is poured in the space, after which a cushion or tray is put on top of the frames, and the cover set over the whole. This arrangement as a whole is excellent, and has given the best of results.

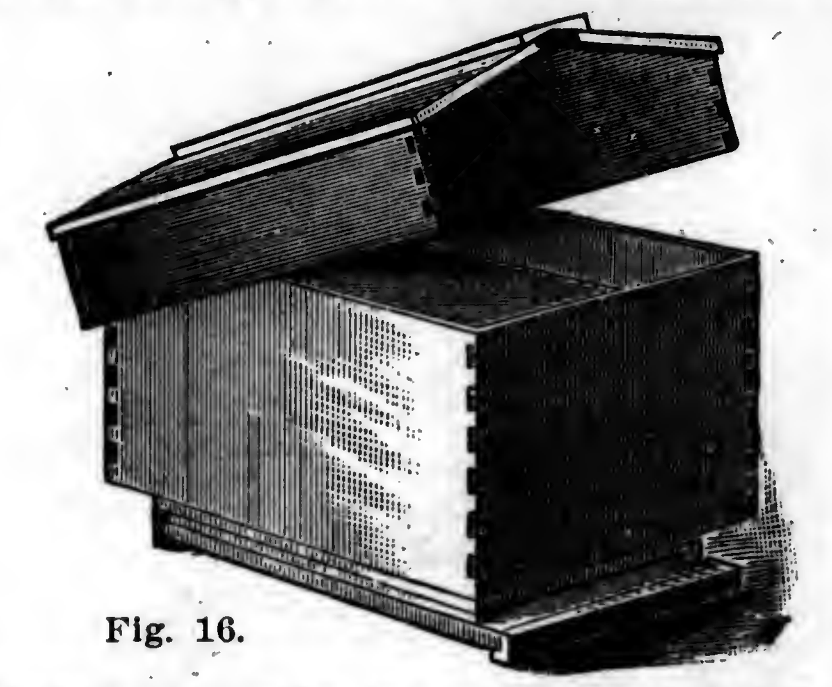

Fig. 16.

These are large enough to go over ten-frame Dovetailed and Simplicity hives, allowing only ⅜ inch space on each side.

Prices: Complete, nailed and painted, $1.20 each; in flat, $1.00 each; $4.70 for 5; $8.80 for 10; $20 00 for 25.

Table of Prices of Dovetailed Chaff Hives.

	Designating Letter.	EIGHT-FRAME Nailed and Painted.	EIGHT-FRAME KD IN FLAT PRICE IN LOTS OF 1	5	10	25	Weight of Ten.	TEN-FRAME Nail'd and Painted.	TEN-FRAME KD IN FLAT PRICE IN LOTS OF 1	5	10	25	Weight of Ten.
1-story Chaff Hive, no super or upper story, with tel. and super cover and chaff-tray.													
Without foundation starters	YW5	2 85	2 30	10 25	19 40	44 50	400	3 00	2 40	11 00	20 50	47 25	410
With foundation for 1-inch starters	YW6	2 95	2 35	10 50	19 90	16 75	400	3 10	2 45	11 25	21 00	48 50	410
1½-story Chaff Hive for comb honey without sections or foundation starters													
For 4¼x4¼x1⅞ beeway sections	YW52S						470						490
For 4¼x4¼x1½ plain sections	YW52P	3 40	2 75	12 25	23 00	52 75	460	3 60	2 90	13 25	24 50	56 50	480
For 3⅝x5x1½ plain sections	YW52I						475						495
For 4x5x1⅜ plain sections, in D. super	YW52M	3 55	2 90	13 00	24 50	56 50	490	3 75	3 05	14 00	26 00	60 25	525
Same with sections and foundation starters													
With 4¼x4¼x1⅞ beeway sections	YW64S						480						515
With 4¼x4¼x1½ plain sections	YW64P	3 75	3 00	13 25	25 00	57 75	470	3 95	3 15	14 25	26 50	61 75	505
With 3⅝x5x1½ plain sections	PW64I						485						520
With 4x5x1⅜ plain sections, in D. super	YW64M	3 90	3 15	14 00	26 50	61 50	510	4 10	3 30	15 00	28 00	65 50	550
Telescope cover, 7 inches deep	Y	60	50	2 35	4 40	10 00	100	63	53	2 60	4 70	10 75	105
Deep Telescope cover, 11 inches deep	X	75	60	2 85	5 40	12 50	120	78	63	3 10	5 70	13 25	125
Chaff tray		25	20	85	1 60	3 50	30	25	20	85	1 60	3 50	30
Super-cover		15	15	70	1 30	3 00	15	15	15	70	1 30	3 00	15
Chaff-hive body with tight bottom	W	1 50	1 20	5 50	10 50	25 00	200	1 52	1 22	5 60	10 60	25 50	205
Chaff-hive body with frames and div.-board	W5	1 90	1 50	6 80	13 00	30 50	240	1 95	1 55	7 20	13 60	32 00	250
Chaff-hive body with frames and starters	W6	2 00	1 55	7 05	13 50	31 75	240	2 05	1 60	7 45	14 10	33 25	250
Winter-case body with padded sticks	Z	60	50	2 35	4 40	10 00	80	62	52	2 50	4 70	10 75	85
Winter-case with 7 inch cover complete	YZ	1 20	1 00	4 70	8 80	20 00	180	1 25	1 05	5 10	9 40	21 50	190

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BROOD-FRAMES.

The brood-frames that we recommend to our cu..omers are those having thick and wide top-bars. When they are 1 1-16 wide, ⅝ to ⅞ inch thick, and spaced ¼ inch apart, with proper bee-space (¼ inch) between the upper and lower story, there will be very few burr or brace combs. In the production of either comb or extracted honey this is of great importance. With the old bars ⅞ inch wide and ⅜ thick, it was not an uncommon thing to have a mass of comb between the brood-nest and the super above. It was then necessary in order to remove the surplus to break all of these comb attachments, leaving the honey to run down over the bees in a way that made them ugly, even if it did not start robbing. This caused no end of annoyance to the bee-keeper, to say nothing of the loss of time and loss of bees. With a top-bar such as we recommend, all of this is almost entirely obviated, and taking off the honey is a real pleasure.

We furnish thick top-bars with either the loose unspaced or Hoffman self-spacing frames.

The Hoffman Frame.

This holds its popularity as well as or better than any device we ever sold, and we have therefore made it our leader for years. It seems to combine in itself nearly all the good features, and for a hanging frame it is the best self-spacer we know of. It economizes labor in that it can be handled in groups of three or four; and any particular frame can be removed without thumbing over nearly all the other frames in the hive to get room. Beginners and even careless bee-keepers of

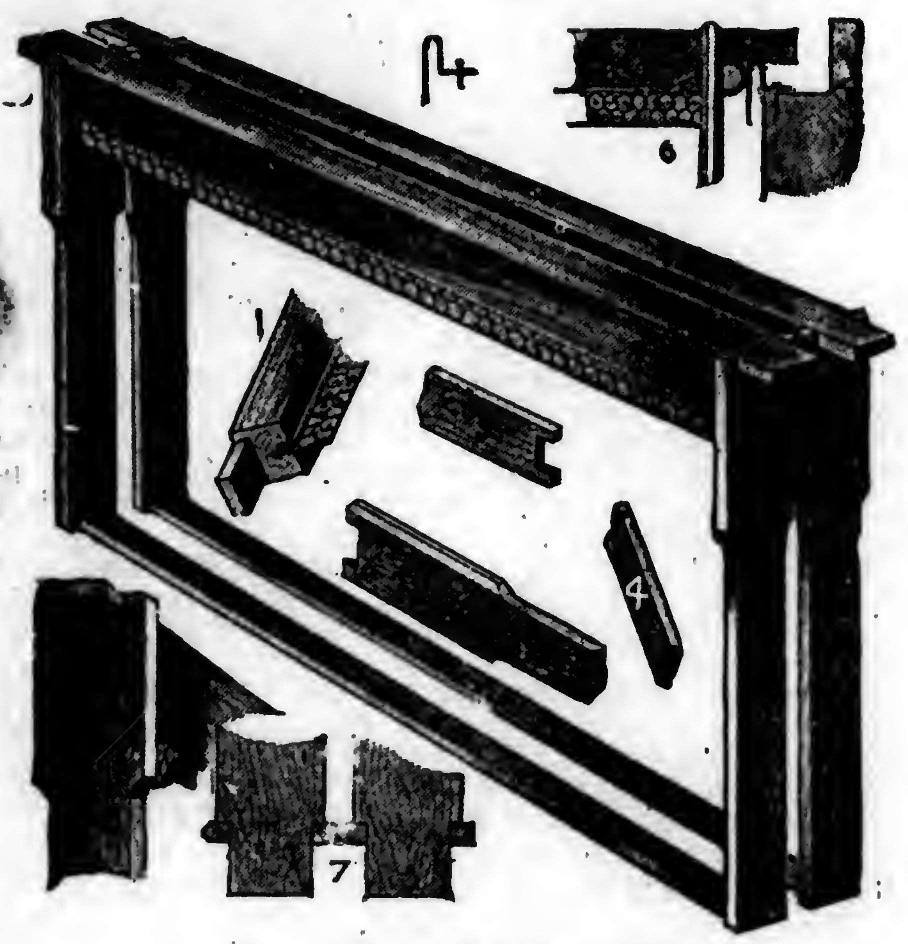


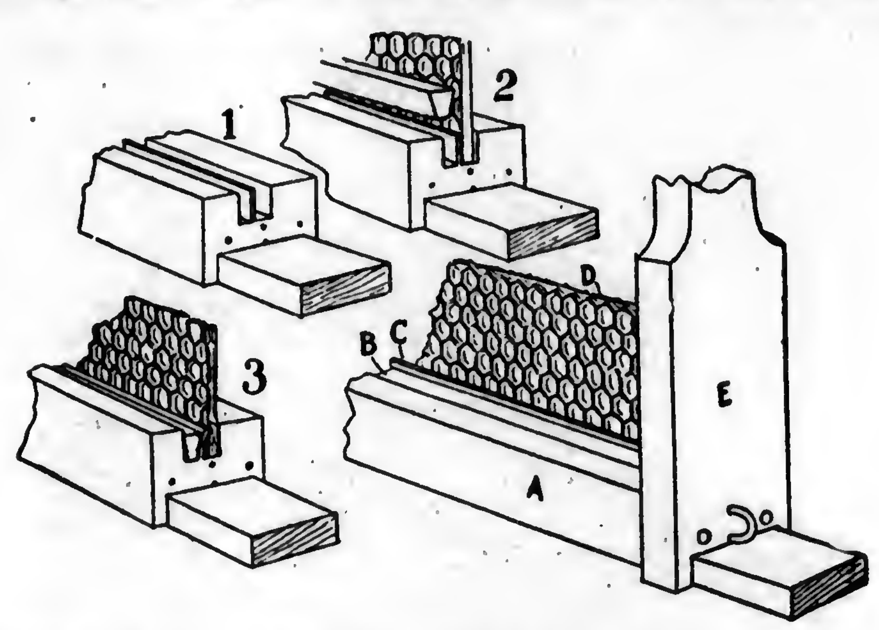
Fig. 224.—Hoffman Frames.

some experience can not fail to get them spaced just right. There is no guessing or haphazard fingering; and the consequence is, the combs are even in surface, and of uniform thickness. In these days, when out-apiaries are so much in vogue, and hives are moved from one point to another, it is highly important the frames be of a kind that will stand hauling from place to place, even over rough roads; and in this respect the Hoffman fills the bill perfectly.

The end-bars are scant ⅜ inch thick, 1 inch wide at the narrowest part, and 1⅜ at the widest. At the point of contact between the two frames, one edge is a blunt V edge and the other square. This, in our experience, and in that of most of our customers, gives altogether the best satisfaction. When both edges are square, propolis accumulates in considerable quantities—so much so that it increases the spacing to an extent that, if the hive is a little narrow, it is difficult to remove the frames. The V edge, on the other hand, when pressure is applied, will cut through the propolis, thus maintaining the original spacing from center to center.

The top-bars are of the regulation 1 1-16x⅞ thick. On the under side there is a double groove, in one of which the foundation is inserted, and in the other a long wedge-shaped strip. When this last is driven into position so that the wedge its entire length is below the general surface of the wood by a slight fraction, it will hold its position, and the foundation itself will be firmly secured. Its manner of application will be seen in the cut accompanying.

An important improvement, which we introduced in 1897, and which met with ready favor, was reducing the length of the projection by which the



frame is supported. This leaves a bee-space around the end, as shown at 6, in Fig. 224. A staple under the projection, and abutting against the metal rabbet just opposite, prevents end-play and propolis from sticking. In removing a single frame with the long top bars it was sometimes necessary to break this gluing of the ends of several frames before one sought could be removed.

There are some who do not appreciate the shortened top-bar, or consider it an improvement. Most likely they do not handle frames enough to make it an object to have them easily movable. Of course, we can still supply the 19-inch top-bar when called for, at the regular price. We can also supply the frames with molded top-bar, either long or short, on orders. As a rule, branch-offices and agencies are supplied only with the regular style, which we always send when no preference is stated.

Thick-top Staple-spaced Frames.

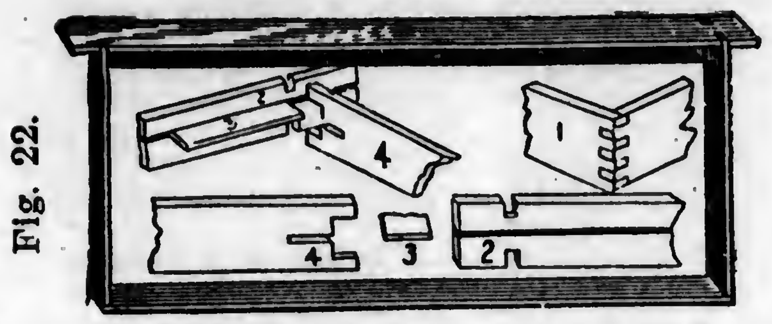
There is a class who, while they regard with much favor self-spacing in frames, object to the Hoffman, either because they have not learned how to use it or because in their locality propolis is deposited so freely as to render handling of this particular style not as pleasant or perhaps as rapid as some frame having a metallic spacer with less edge of contact. For bee-keepers of this class we know

Fig. 225

of nothing as good or as cheap as our regular thick-top frame we have sold for years with staples driven as shown in Fig. 225. One is driven under the projection of the top bar at each end, one on each diagonally opposite side, making four in all for each frame.

All-wood Frames.

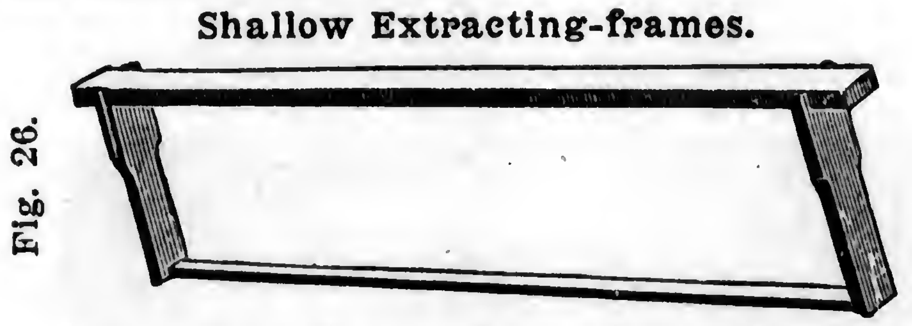
Fig. 22.



These are the same that we have sold for many years. The top bars are ⅞ inch wide by ⅜ inch thick. Their only merit is cheapness. They are not proof against burr and brace combs nor sagging of the top-bar. While we do not recommend these we are prepared to furnish them, as some will have them for extracting, and as to the burr-comb nuisance, they have become accustomed to it; and, besides, these scrapings of wax, they argue, when run through a wax-extractor, help to increase their profits. For $1.00 per 1000 we will make these all-wood frames with top-bars, ½ inch thick. This will prevent the sagging, and possibly reduce the number of burr-combs.

Shallow Extracting-frames.

Fig. 26.



These are made like the all-wood frames, but with top-bar 1 1-16 inches wide, and 5-16 inch thick; no comb-guide. Bottom-bar is ¾ wide, and ¼ thick; the end-bars are Hoffman self-spacing style, 5⅜ deep, end-spaced with staple same as full-depth Hoffman frames.

Price List of Brood Frames.

Name.	Put up 100	In flat 10	In flat 100	In flat 500	Wt. of 100
Hoffman frames, end-spaced	3 50	30	2 50	11 00	40 lbs.
Thick-top staple-spaced frs...	3 25	25	2 25	10 00	38 lbs.
All-wood frames...................	2 75	20	1 80	8 00	25 lbs.
Shallow ext.-frames (5⅜-in.)	2 75	20	1 80	8 00	22 lbs.

Frames pierced and wire included, 10c per 100 extra. Frames 11¼ inches deep for Jumbo hives, 30c per 100 extra. Nails included with all frames to nail them up. End-space staples, including gauge for driving, 20c per lb.; 2½ lbs., enough for 1000 frames, 50c; ¼ lb., enough for 100 frames, with gauge, 20c.

Odd-sized Frames.

The frames described on the previous page are all the Langstroth size, that fit the dovetailed hives, and measure outside 9⅛x17⅝ inches, top-bar 18¾ inches; except in the all-wood frames, top-bar is 19 1-16 inches. We will make other sizes, in lots of 100 or more, when wanted, of all but the Hoffman frames, at the same price as above, with 50 cts. on the lot added for setting our machines. For the Hoffman frames, odd size, the charge will be $1.00 on the lot for setting machines.

Tinned Wire.

Fig. 28.

Sizes furnished.	Price each	Price doz.	Post. each.
¼-oz. spools No. 30 tinned wire...........	$ 03	$ 25	02
¼-lb. spools No. 30 tinned wire...........	10	1 00	06
½-lb. spools No. 30 tinned wire...........	15	1 65	10
1-lb. spools No. 30 tinned wire...........	25	2 75	18
5-lb. coils No. 30 tinned wire...............	80		

No. 30 tinned wire seems to be the most s... of any for wiring frames. We keep it in s... spools as listed.

How to Wire Frames.

The end-bars should be pierced by four holes equally distant before nailing. The wire should be threaded through all the holes, and drawn just tight enough to take up the slack (be sure not too tight or the foundation will buckle). At each hole of the terminal wires, drive a small tack; and around them wind the loose ends of the wire, and drive the tacks up to the heads. The wires should now be parallel to the top and bottom bars, and two inches apart, the first wire one inch from the top-bar, and the last wire ¾ inch from the bottom-bar. Cut the foundation ⅜ inch shallower than the inside depth of the frame. Insert the top edge in the center groove and fasten by pressing the triangular wedge in adjoining groove. The wire should be imbedded in the regular way, as shown on page 17, and the work is done. We always use wire frames, and recommend others to do so; i. e., if they intend to use full sheets of foundation. As the majority do not, we pierce the end-bars only when so ordered. Our price for this is, including sufficient wire, 10c per 100 extra on the price of the frames.

Chaff Division-boards.

These are made of thin wood, packed with chaff, and have cloth cushion, bottom and ends, that they may fit closely in any hive, and be easily removable.

Plain Division-boards—no Chaff.

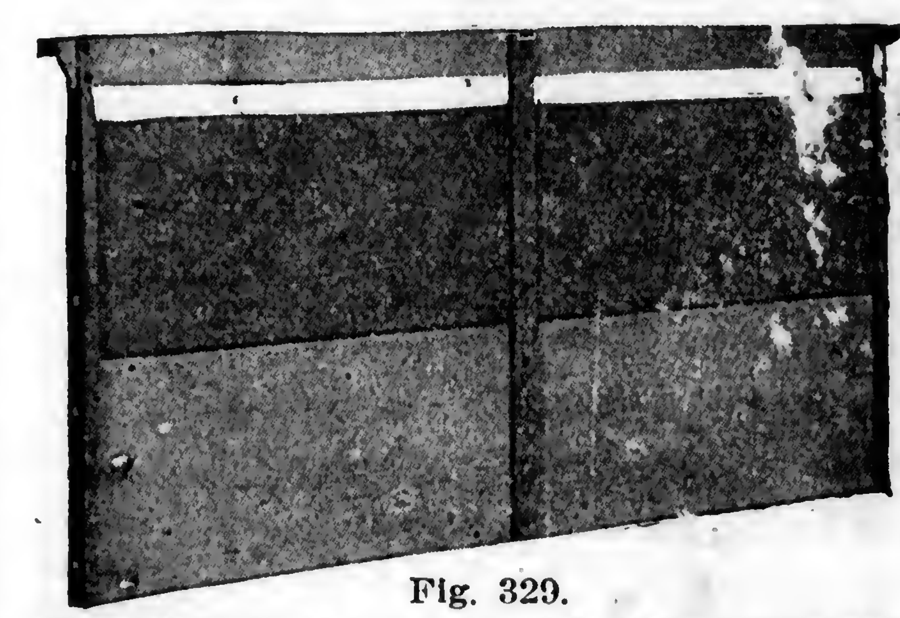


Fig. 329.

One of these is put into each of the Dovetailed hives we send out, and is used as a follower with spacing-frames, such as the Hoffman or closed-end; but in the ten-frame size it cannot be used when *all* the ten frames are in. They have the same outside dimensions as brood-frames, and are 3-16 inch thick.

Price List of Division-boards.

	Pr. of 1	Pr. of 10	Wt. of 10
Chaff division-board, complete	$ 30	$2 60	20 lb
Chaff division-b'd, flat, no chaff	15	1 30	13 lbs.
Plain division-board, nailed.....	10	90	10 lbs.
Plain division-board, flat.........	08	70	9 lbs.

Super Covers.

Price for 8 and 10 frame supers, 15 cts. each, $1.30 for 10.

With covers like the telescope which leaves more than a bee-space above the sections, you need a super cover. Some use an enamel sheet, but the most satisfactory cover is a thin board bound on the ends to prevent warping. These are greatly appreciated by those who have used them. They are a scant ⅜ inch thick, and bound on the ends with metal channel irons. They should be supported a bee-space above the sections or frames.

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SECTION HONEY-BOXES.

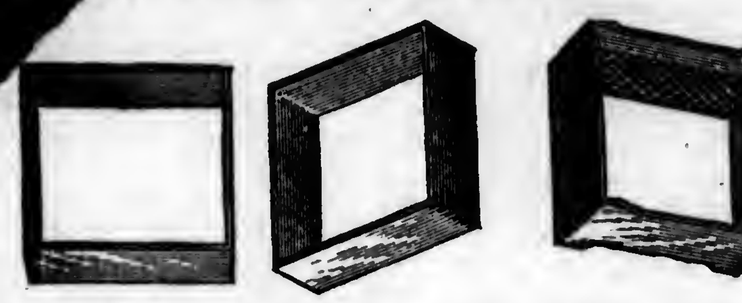


Fig. 7.—One-piece V-groove Section.

The making of sanded and polished one-piece sections is one of our specialties, and our output has reached fifteen millions a year. Having an investment of thousands of dollars in special automatic machinery, we are enabled to turn out a product that for quantity, finish, workmanship, and accuracy, can not be excelled. The sections are polished in double-surface sanding-machines, and the result is uniform quality, and the same *absolute thickness* from end to end.

Our No. 1 sections are made of the choicest white basswood lumber, and are all perfect in finish, and free from defects. They are not all snow-white, but vary from that to a light cream color. Choice honey shows off to best advantage in a section not too white, as it is the honey rather than the wood that the consumer looks at.

Our No. 2 sections selected from our best grade sell at a price considerably less than our No. 1, and are correspondingly lower in quality. The larger part are equal to No. 1, except in color, while some have dark spots and saw-marks, or other blemishes which exclude them from No. 1 grade. We do not make the No. 2 grade to order, but have them only as they accumulate in making No. 1. Many prefer this grade when they see them at the lower price.

Different Styles of Sections.

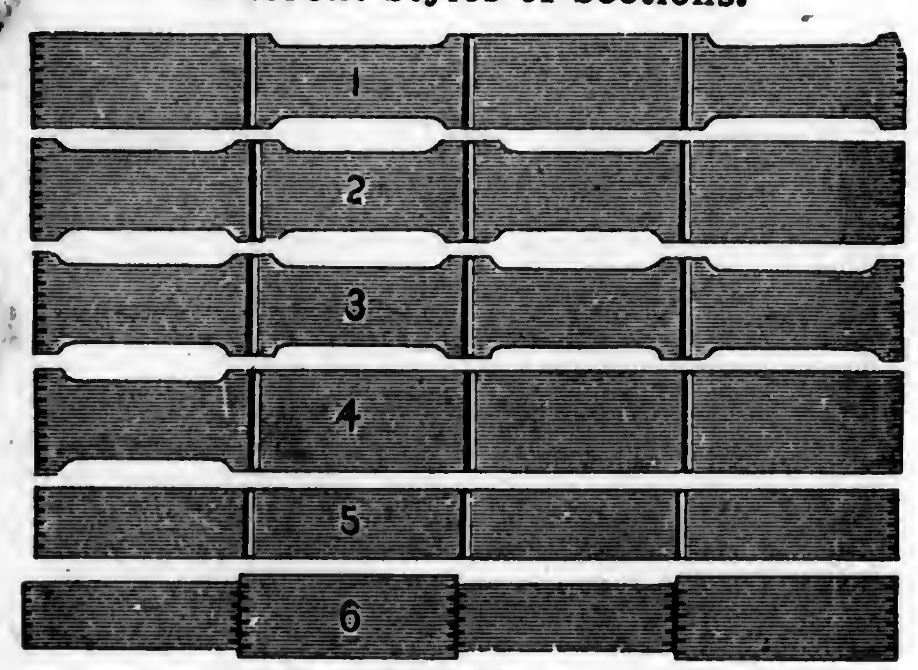


Fig. 39.

Style 1, *two-beeway*, has been the most common pattern, open top and bottom.

Style 2, *three-beeway*, has been recommended by the Dadants, because by using it you can have tops closed or open and the sides open.

Style 3, *four-beeway*, is open on all four sides.

Style 4, *one-beeway*, is open on one side only.

Style 5, *plain*, no beeway, used with fences or cleated separators.

Style 6, *dovetailed* all around and two-beeway.

Size and Width of Sections.

The section in common use for a good many years back has been 4¼ inches square; but in the last few years there has been a tendency toward a section taller than broad. Recently we put out, rather cautiously, the 4x5, and it has taken so well that it is now one of our regular sizes. In 1898, in answer to a demand for a smaller section, and something that will just fit an eight-frame super, we brought out our 3⅝x5. Our three regular sizes will be the 4¼x4¼, the 4x5, and the 3⅝x5.

Up till lately sections were almost universally provided with beeways, as shown in styles 1, 2, 3, 4, Fig. 39; but for reasons stated under HIVES, page 5, it would look now as if the beeway sections would soon give place to the no-beeway, or, as we call it, the "plain" section. This is shown in style 5, Fig. 39. We have for years made this style of section, but only within the last few years have we and our bee-keeping patrons discovered that they were much superior in every way to the section provided with openings. As the merits of the plain sections are fully set forth on page 6, we will not attempt to go over the ground again; nor will we discuss the reasons why the tall section has been receiving prominence of late, for that question is likewise covered on page 7. But with any of the plain sections the fence or cleated separator must be used. The cleats on the fence take the place of two-thirds of the beeway on the old-style section.

Besides the matter of breadth and height, there is one of width (or that which regulates the thickness of combs), and this will depend largely on whether the sections are provided with beeways, as shown in styles 1, 2, 3, 4, Fig. 39, or plain, as shown in style 5. The regular size of section hitherto has been 4¼ square by 1⅞, with the usual beeway. The same section without beeways will be 1½, and will hold about the same amount of honey. The old seven-to-foot, with beeways, will be 1⅜ without beeways. In any case, to get at the width of a plain section, we ordinarily figure on about 3-16 for a beeway; and if a section was formerly plump 2 inches in width, with the beeways, without them it will be 1⅝.

The section that promises to be standard is 4¼ square by 1½, plain. The 4x5 plain is also coming to the front.

We show here a box of 500 sections as we now pack them for shipment.

Fig. 340.

Price List of Sections.

4¼ by 4¼ by any width 1¼ to 2.

Widths of style 1 sections generally kept in stock are 1 15-16, 1⅞, 1¾, 7-to-ft., while 2, 1⅝, and 1½ can also be furnished: plain sections 1½, 1⅜, 1⅝, and 1¼. When you do not specify style or width we will send style 1, 1⅞ inches wide. In style 5, 1½-inch will be sent if width is not specified.

	No. 1.	No. 2.		No. 1.	No. 2.
Per 100,	$ .60	$ .50	Per 2000,	$ 8.00	$ 7.00
Per 250,	1.15	1.00	Per 3000,	11.25	9.75
Per 500,	2.00	1.75	Per 4000,	15.00	13.00
Per 1000,	4.00	3.50	Per 5000,	17.50	15.00

In lots of 1000 or more the price will be 25 cents per 1000 less for the 4¼x4¼x1⅝ or 1½ or 1⅜ plain, the 3⅝x5x1½ plain, and the 4x5x1⅜ plain sections.

Other sizes of one-piece sections will be furnished in lots of 500 or more at following price namely, for the quantity wanted, take the price of the regular size, add to it 10 cts. per 1000 for each inch or fraction of an inch that the size you want unfolded *exceeds* in length the regular size, the length of which is 17 inches. Add also 50 cents on the quantity ordered, whether 500 or 5000, to pay for adjusting machinery to the odd size. If the odd size you want is larger one way than it is the other, indicate which way you want it to stand up in the hive—thus: ▯ or thus ▭ ; or give the bottom or horizontal ⊔ measure first, and the upright or side next, and also give the width, and specify the style wanted. Unless you are careful to give all these details fully we shall be obliged to delay to write you before we can fill your order.

Material for nailed sections will be polished the same as one-piece; for dovetailed-all-around sections, style 6, pieces will be sawed smooth. Price of either kind will be 50 cts. per 1000 *more* than the same size of one-piece sections, but no extra charge is made for adjusting machines.

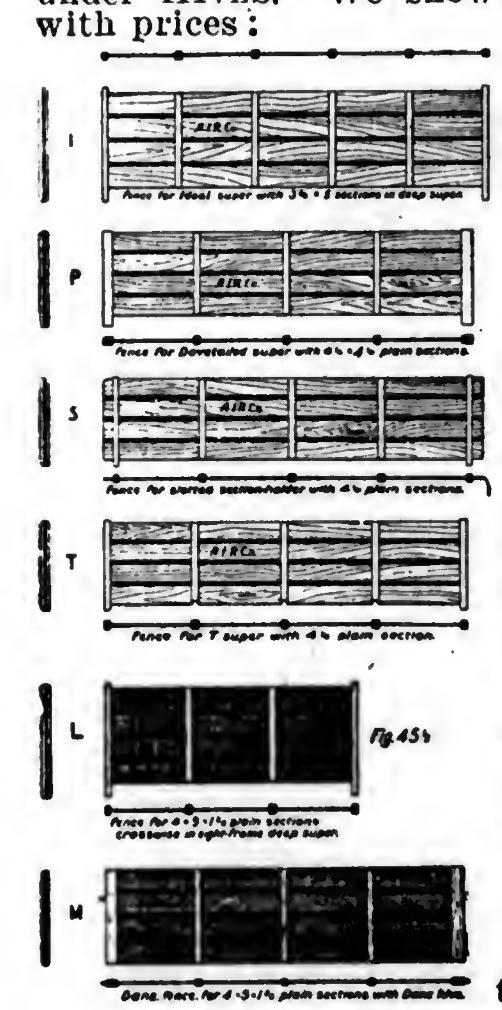
Hubbard Section-press, Pat'd.

FIG. 46.

Price, $2.50; weight 25 lbs. This is the best machine for putting together the one-piece section that we have tried, and we have seen most of them. The ends of the section are forced together by means of a toggle joint, a principle by which great power can be applied. With it a child can fold about 500 one-piece sections per hour. Place a pile of sections in your lap, pick up one, fold it, and then throw the section into a large basket. They are made adjustable for sections of different sizes.

Fences or Cleated Separators.

In connection with the plain sections of various sizes and in different styles of supers a number of different fences are required, as explained fully under HIVES. We show here the different styles with prices:



I Fence.—Used in the deep super with 3⅝x5x1½ plain sections.

P Fence.—Used in Dov'd super with plain section-holders, 4¼x4¼ plain sections.

S Fence.—Used with plain 4¼ sections in slotted section-holders.

T Fence.—Used in T super with 4¼ plain sections; with cross-slots, as shown.

L Fence.—Used crosswise in eight-frame deep super with 4x5x1⅜ plain section.

M Fence.—Used in the Danz. super with 4x5x1⅜ plain section.

I and M fences weigh about 15 to 18 lbs. per 100.

P, S, T, and L fences weigh 10 to 12 lbs. per 100.

Fences of other sizes and styles made to order. Prices on application with full particulars.

D. Section-case.

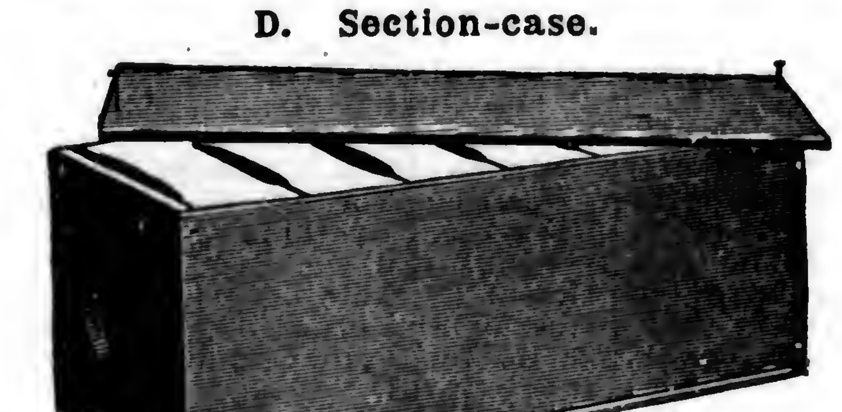


Fig. 43.

Price of D. section-case complete with sections and starters, 15c each; 10 for $1.30.

In flat, no sections or starters, 6c each; 10 for 50c.

Above are 12 inches long, fitting crosswise the eight-frame super. Will make them 14-inch for ten-frame hives, and 1c each extra. In flat, 55c per 10.

This case is designed to take the place of the old farmer's honey-box, and will be appreciated by many for various reasons. It is of such a size that it can be used on almost any hive, and if you choose it can be sold entire just as filled by the bees.

Section-holders and Separators.

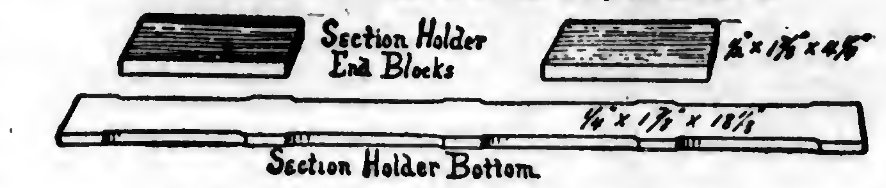


Fig. 44.—Slotted Section-Holder.

Slotted section-holders and slats are used with styles 1, 2, 3, or 4 beeway sections, while plain section-holders and slats are used with plain sections (style 5).

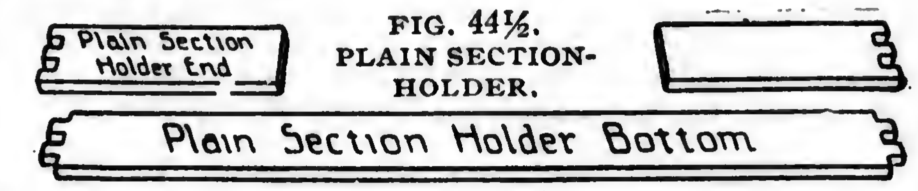


FIG. 44½. PLAIN SECTION-HOLDER.

Slotted separators are used in connection with slotted section-holders and plain sawed separators in T supers or on wide frames in connection with beeway sections, while fences are used with plain

section-holders and slats in connection with plain or no-beeway section.

PRICE LIST OF SECTION-HOLDERS, SEPARATORS, AND SLATS.	Price of 100	Price of 500	Wt. of 100
Slotted section-holders, 1⅞x18⅛ outside	1 70	7 00	35 lbs
Slotted section-slats, ¼x1⅞x18⅛	85	3 50	15 lbs
Plain section-holders, 1½x17½ outside	1 40	6 00	20 lbs
Ideal plain slats, ⅜x1½x18⅛	85	3 50	18 lbs
L plain slats, ⅜x1⅜x12	60	2 75	10 lbs
Slotted sawed separators, 4½x18⅛	90	4 00	8 lbs
Plain sawed separators 3¾x17 to 20	60	2 75	6 lbs
Slat separators	1 50	6 75	10 lb
I, P, S, T, and L fences	1 60	7 25	11 lb
M fences	1 75	8 00	13 lb

T TINS.	Price per 100.	Weight
T tins, 12, 13¼, 14 inches long or under	$1 00	7 lbs.
T tins, 16 in. and under, to 14 in long	1 20	8 lbs.
T tins, over 16 in., up to 20 in	1 50	10 lbs.
Flat tins, 14 in. and under, ⅝ wide	40	3 lbs.
Flat tins, 14 to 20 in. long	60	5 lbs.

Tin rabbets for hives same price as T tins.
Bent staples, about 400 to lb., 3 oz. 10c; 1 lb. 40c.
Straight staples (unbent), 3 oz. 5c; 1 lb. 20c.
Thumb-screws, $1.25 per 100; postage 40c.

Paint for Hives.

Price gal., $1.60; half-gal., 85c; qt., 45c; pt., 25c.

We are having put up for us a specially prepared paint for bee-hives, already mixed. It is composed of pure white lead and zinc mixed with pure linseed oil, and it will outlast any ordinary white mixture that you can get, besides being quite reasonable in price. We have it put up in pints, quarts, half-gallons, and gallons, in tin, already mixed for use. A gallon will cover about 300 feet of surface two coats, so that you need a gallon for twenty 1½ story Dovetailed hives. The great majority of liquid paints on the market are very much adulterated. Our B. P. S. we *know* to be absolutely pure lead, zinc, and linseed oil. It will go further and last longer than any other paint with which we are acquainted. We use it exclusively on all of our hives. Remember that a cheap paint is dear at any price.

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WEED NEW-PROCESS FOUNDATION.

MACHINERY AND PROCESS PATENTED.

During the fall of 1895 Mr. E. B. Weed brought to our attention the value of his new process of sheeting wax—a process by which a tougher and more transparent article was secured in *continuous sheets.* So thoroughly convinced were we, after examination, of its great superiority that we immediately went to work building special automatic machinery under the patents owned by Mr. Weed. Since that time we have invested thousands of dollars in experiments, machinery, and all the Weed patents covering this process, so that now we control the Weed new-process foundation, except in those countries where the patents were sold outright.

So greatly superior was the product to that turned out by the old methods that our sales were doubled, tripled, and quadrupled, so that we have sold as high as 110,000 lbs. in a single season, to say nothing of the amount made on our Weed machinery sold in the United States and other countries. The great demand for the "Weed New Process" practically drove the ordinary foundations out of the market, and forced our competitors to put out other so-called "new process" of their own, but which, like all copies, lack some of the essential features of the Weed.

The Weed automatic sheeter during the process of sheeting exerts a pressure of from 400 to 1000 lbs. to the square inch, converting raw cakes of wax into *continuous* belt-like sheets, semi-transparent and tough. These, reeled upon bobbins, are next passed through plain rolls, reducing the thickness of the wax more than half, or to the thickness just sufficient to fill the cell-walls of the foundation-rolls without elongating the sheet during the operation of milling. The product, when it comes from these plain, smooth rolls, is so transparent it is as clear as glass itself, of a beautiful pale amber tint. It is next run through a power comb-foundation machine that embosses these continuous sheets into foundation. Geared to this is an automatic pulling-off machine, which cuts and trims to the desired size, papers, and piles it automatically, so that one attendant practically performs the work of a dozen people. The last-named machine draws the wax from the combs so gently that there is very little stretch in the cell-walls; and we estimate that this makes a difference in favor of the Weed new-process foundation, over that made by the old, of something like 800 cells to a Langstroth frame.

The net result of this operation is that we have regular piles of papered foundation, each sheet of which is as clear as crystal, so clear, indeed, that when it is laid upon a page of reading-matter it is possible to read through it very readily.

The rolling-down of the wax through the smooth rolls enables us to secure a foundation with thin base and *higher side walls;* for it has been found repeatedly by experiment that bees will seldom thin down the wax in the *bases,* but will thin down the *cell walls,* no matter how thick and heavy they may be; so it is economy to put the wax right where the bees will use it—in the wall. Up till this time quite a percentage of wax was thus wasted, which now being placed where it can be utilized by the bee enables us, with the same degree of safety, to add to the number of sheets per pound, *thus making our foundation, at the same price per pound, actually cheaper than other makes,* except that made under the Weed patents by others. By consulting the table of prices you will see that our medium brood, instead of running from 6 to 7 sheets to the pound, now runs 7 to 8; and the light brood, instead of 8 to 9, is now 9 to 10; thin super from 26 to 28; and extra thin from 30 to 32.

The Weed new-process foundation has been indorsed by experiment stations and agricultural colleges, as well as by private individuals. Wherever it has been placed in actual competition with the ordinary foundation it has been found that the bees not only take to it more quickly, but draw it out more fully. The result is that sections containing the Weed new-process foundation will be filled and capped over sooner than those containing the old-process.

Our Foundation-machines.

Our foundation-machines are used almost exclusively in the United States, France, Germany, and Australia, and very largely in England. As the machines for our foundation department are made in our own shop by skilled workmen, just as soon as the face of the rolls becomes the least worn or defective we put in new sets, as it doesn't pay us to tinker up old rolls. The consequence is, that the Weed new-process foundation is not only tough and beautiful, but is as perfect as new and accurate die-faces can make it.

The Use of Comb Foundation.

There is little question but that it pays to use foundation in full sheets in the brood-frames and sections, especially the latter. If you think you can not afford so much you should at least have a strip for a starter. It will help much more than it costs you, in getting straight even combs. You can use a starter any width from one inch up. In sections by far the best results are obtained by using a bottom starter not over ¼ inch, and a full top starter reaching to within ¼ to 3-16 inch of the bottom starter.

What Weights to Use.

Medium and *light* brood foundation are used only in brood-frames; *thin* and *extra thin* super only in surplus boxes.

For frames without wire, and those deeper than L. frame, *medium* brood should be used. We do not recommend *light* brood in full sheets without wire, although under many circumstances it can be used in safety without, for the method of making renders this grade much less liable to sag than formerly.

If you use only a starter in section-boxes, *thin* foundation is best; if full starters are used *extra thin* will be better, as it is not so perceptible in the honey when finished, and does not make what has been called "fish-bone" in comb honey. It being so thin, some have had trouble with the bees tearing it down, and therefore they prefer to use *thin.*

For the person who is not sure what he wants, we advise medium brood for use in the brood-frames, and thin super for sections.

We guarantee all our foundation to be fully equal to samples in every respect, and invite comparisons with other makes. Samples free.

Table of Prices of Comb Foundation.

When you order, be sure to tell what grade you want, and give price.

NAME OF GRADE.	Size, and sheets per pound.		In lots of			
			1 lb	5	10	25
Medium brood........	7¾x16⅞	7 to 8	53	51	49	48
Light brood............	7¾x16⅞	9 to 10	55	53	51	50
Thin super.............	3⅞x15½	28	60	58	56	55
Extra thin.............	3⅞x15½	32	63	61	59	58

For 100 lbs. or over, write for wholesale prices.

Foundation packed for mailing requires 25 cts. per lb. postage. Not less than 1 lb. of brood foundation, L. size, can be packed safely for mailing, nor less than 3 lbs. of larger sizes. Brood foundation is made in one regular size, 7¾x16⅞, which is just right for the L. frame, wired or unwired. It is also furnished 6½x16 for the Danz. frame, and 9⅞x16⅞ for the Jumbo frame, when so ordered. Other sizes made to order.

Thin and extra thin super is in sheets two regular sizes, either 3⅞x15½ for 4¼-inch sections, or 4⅝x13 or 14½ for Ideal or Danz. sections.

When no size is mentioned we always send the regular sizes mentioned in table of prices.

For less than 5 lbs. of any other size than regular, add 5 cts. per lb. for extra trouble in trimming.

Order in regular-sized packages so far as possible, 1, 2, 3, 5, 10, and 25 lbs. Packages of 5 lbs. and less are put up in pasteboard boxes so there will be no danger of damage to the wax when sent with other goods.

Drone-comb Foundation.

The foundation used almost exclusively is of worker size, five cells to the inch. There is an occasional call for drone size, four cells to the inch. Worker-comb foundation is often used to prevent the bees from building drone comb and rearing useless drones, but there are times in breeding choice queens when drone brood is desired. There are others who have preferred drone comb in supers. We are prepared to supply drone-comb foundation in light-brood and thin-super grades at 3 cts. per lb. advance on the regular price.

How to Refine Wax with Sulphuric Acid.

Black, dirty, or off-graded cakes of wax can be brought to a bright yellow by means of sulphuric acid. Into an iron kettle (the larger the better) pour in enough water to fill it about an eighth full, and add enough commercial sulphuric acid to make a strong vinegar. Bring the water to a boil, then throw in the cakes of wax. Let it boil for a little time, and then let the fire die down. Wrap the kettle up in old rags or carpets, and allow it to stand for an hour or two, after which dip off the free wax from the top. If the work has been done rightly, the cakes, when cool, will be of a bright yellow, and will bring from one to two cents more a pound on the market. If the wax to be treated is very dark more acid will be required. In any case use enough to get the requisite color.

We pay market price for BEESWAX. See quotations in *Gleanings,* or given on application. We pay at date of this catalog 28 cts. cash, 30 cts. in trade, for average wax delivered at our place of business.

PARKER'S FOUNDATION-FASTENER.

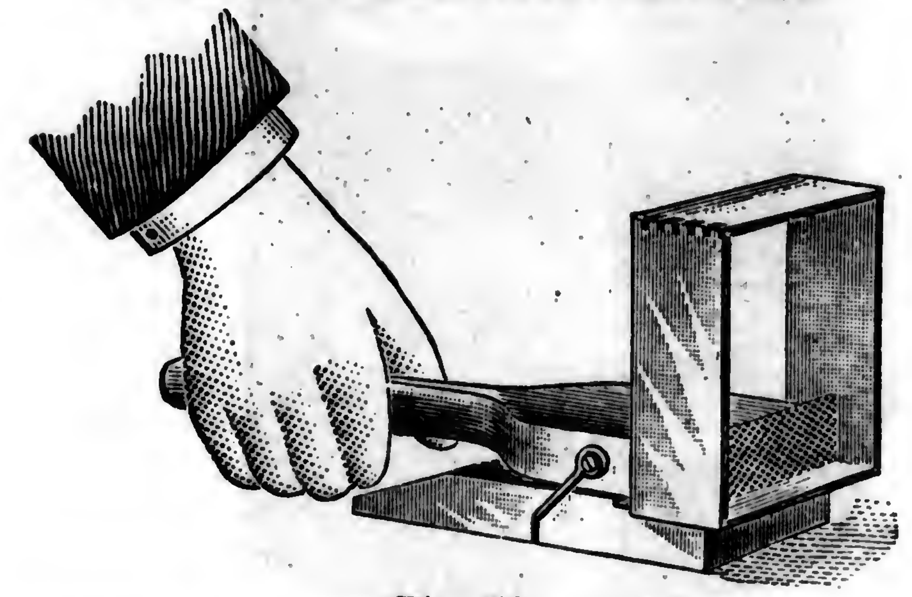


Fig. 51.

Price, for 1-lb. sections, 25c; by mail, 15c extra.

Directions for Using.—Fasten machine to a bench or table; put a little honey on point of lever where it touches the foundation; slide box under lever, against stop; put foundation under ⅛ inch; raise back end of lever, at same time turning the piece of foundation up against end of lever; slide lever off the foundation; this movement fastens it firmly to the box.

DAISY FOUNDATION-FASTENER.

Fig. 352.

Price with lamp.....$1.00
Price without lamp.. .70
Weight without lamp 5 lbs.

We make three sizes of plates, for the 4¼, the 3⅝, and the 4 inch section. Unless you specify which size you want we send the one for the 4¼-inch section. Any of the plates fit the same machine, so that you can have extra plates if you use more than one size section. Extra plates, 20c each; by mail, 35c.

This is the best for putting starters into sections. Nothing could be more simple, or more easily operated than this machine; and we are sure it will put starters in better and faster than any machine before produced. With this a boy or girl will put starters in about 500 sections per hour, and do it nicer than any of the presser machines we formerly sold. This has been greatly improved by a cast-iron plate with ribs on the edge, and projecting beyond the lamp-chimney, so that the melted wax unused may drip into a can placed on the shelf just behind the lamp. The plate being heavier retains the heat better. Complete directions accompany each machine.

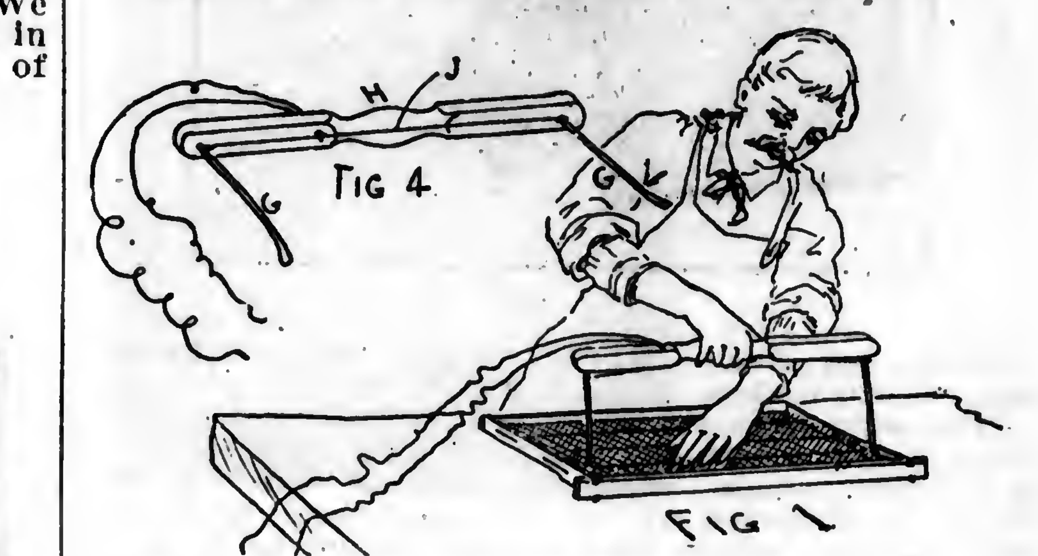
SPUR WIRE-IMBEDDER.

Fig. 53.

Price 15c; by mail, 18c. This is a little tool like a tracing-wheel, with teeth set in such a way as to straddle the wire while it is in the act of imbedding. It is the best tool we have ever tried for that purpose.

Daisy roller, shown above, 15 cts.; by mail, 18.

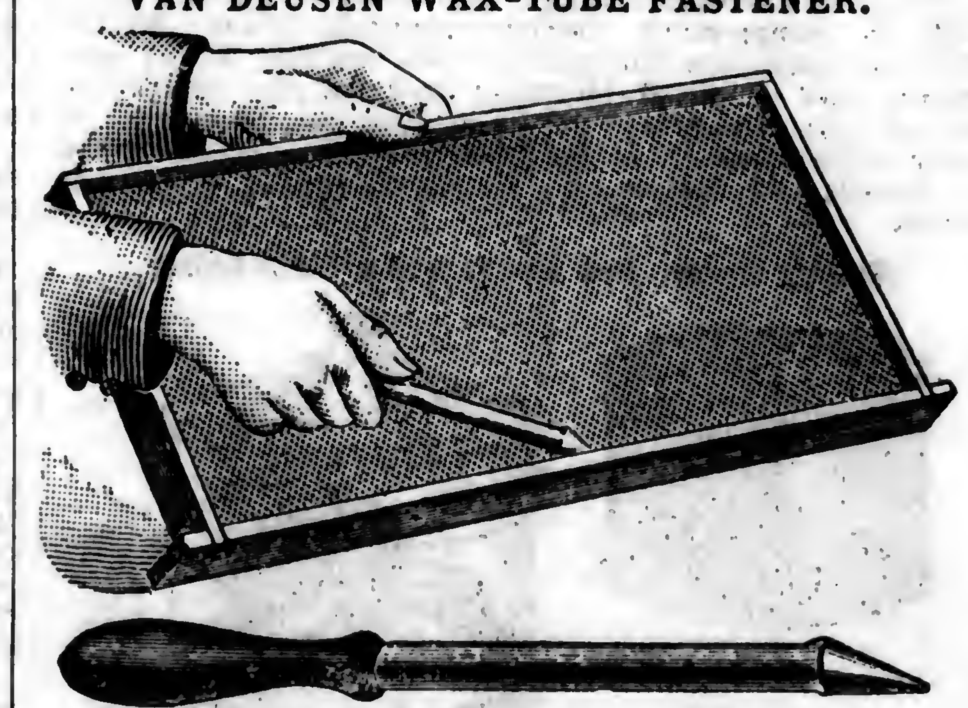
ELECTRICAL WIRE-IMBEDDING OUTFIT.



Price of outfit complete, $3.00.

If you have very much foundation to put on wired frames it will pay you to use this outfit. The saving in time and the nicety of the work will more than pay the extra cost. It includes a battery of six standard dry cells, and all the necessary tools. The batteries heat one strand of the wire at a time, so that it sinks into the foundation by simply pressing lightly on the sheet on the reverse side with the Blood roller, or even with the hand. Directions for use accompany each outfit.

VAN DEUSEN WAX-TUBE FASTENER.



Price 15 cts.; by mail, 18.

While the wedged top-bar with double grooves (see Fig. 224) affords the most satisfactory method of fastening foundation, yet to those who desire to fasten the sheets to *thin* top-bars there is nothing any better than the VanDeusen wax-tube. It is simply a tin tube about half an inch in diameter, six inches long, tapering, and at the apex a small hole. On one side, near the handle, is pricked another small hole which may be opened or closed with the thumb. When the tube is stood up in a cup of hot wax the air will escape from the upper hole, and the wax flow in at the other small hole at the bottom. The thumb is closed over the upper one; the instrument is drawn out of the wax, and the point is then slowly drawn along the edge of the foundation in contact with the top-bar, leaving a fine stream of hot wax to cement it.

WAX-EXTRACTORS.

The Doolittle Improved Solar Wax-extractor.

Fig. 68.

Price, small size, $4.00; weight 30 lbs. Large size, 26x60 inches, glassed, $7.50; weight, 110 lbs.

The solar wax-extractor is almost indispensable, even in a small apiary. Bits of wax, such as burr and brace combs, scrapings, and the like, can be instantly disposed of by dropping them into the sun machine, which may be and should be located as near the center of the apiary as possible. There is no messing-up of the good wife's stove or floor, no building of fire, no burning of the wax; and the quality of the product, owing to the bleaching effect of the sun, is of the finest, bringing the highest price in the market. But the solar wax-extractor is not adapted to rendering up old combs. While it is just the thing for melting up cappings, and burr and brace combs, yet when it comes to melting up old brood and extracting combs, such as are too old and too crooked for further use, or that are diseased, the steam wax-press should be used.

We also furnish a large-sized solar wax-extractor with a large-sized double-strength glass 26x60. This is built on the same lines as the small machine, and is, to distinguish it from the Doolittle, called the Boardman. This size can be used to good advantage in large apiaries. The refuse from it should, of course, be further treated with the press.

Root's Improved Swiss Wax-extractor.

Fig. 67.

Price $3.00; with steam-generator, $4.00; wt., 20 lbs.

We have sold this machine a good many years, and in its day we considered it our best extractor; but as it requires much hard work to handle, and takes fuel, and give no better results than the solar wax-extractors, we do not recommend it.

The Root-German Steam Wax-press.

This machine, if it is operated according to directions, ought to pay for itself easily, for it gets all the wax out of old combs. Much of the slumgum (refuse) from solar extractors and other machines contains a large percentage of wax, and this, with our machine, can be separated out. Whatever, therefore, one of these presses saves is just that much clean profit, for formerly the slumgum, and with it good wax, was thrown away. Some bee-keepers have made money in off seasons buying up solar-wax-extractor slumgum and putting it through a press. A word to the wise is sufficient.

Fig. 169.—The Root-German Steam Wax-Press. Price $14.00.

Our German machine is patterned after some of the best steam-extractors that have been used across the water, using the best features of all of them. It is strongly made, and proportioned to stand the heavy strains to which such a machine is necessarily subjected.

The cross-arm is made of the best selected oak, secured at each end with bolts and large-sized thumb-nuts. The plunger-plate B is made of two circular pieces of hard wood, nailed together with the grain of the wood crossing at right angles. The bottom of the plate is ribbed with strips of wood, the purpose of which is to afford passageways for the free wax to escape under the plate when pressure is applied. The screw is eight-pitch, double-lead, by which one turn of it will depress the plate one-fourth inch. The basket is made of a heavy grade of perforated metal supported by a cast-iron spider, C, that will stand all the strain that the screw can put upon it. To apply pressure, grasp one end of the cross-arm with one hand, and with the other, turn down the lever and squeeze the slumgum into smithereens.

The lower compartment, H, of the press holds water, which, on coming to a boil, causes the steam to pass all through the mass of wax in the basket. A false bottom, G, just above the water catches all the wax drippings, so that the free wax itself runs out as shown. After the steam has caused all the free wax to escape, pressure is applied in alternation, causing every particle of wax to be forced out.

We make only one size of this machine, and that is the large size. No bee-keeper who counts his time worth anything can afford to fuss with a small machine holding scarcely a peck, and we do not, therefore, make them. The size we make will hold 1¼ bushels of combs, and on rainy days, when the bee-keeper can do nothing in the yard, he can make good wages by rendering up the product of 500 colonies—that is, such refuse and such old combs as would naturally come in the ordinary course of the season.

HONEY-EXTRACTORS.

We take great pride in our line of honey-extractors, as we believe we have the best in the world. Do not take our word for it, but examine into the principles and mechanical construction of the machines we put out, and those made by other parties.

We have a modern machine-shop equipped with thousands of dollars' worth of new and up-to-date tools. Besides these, we have a corps of machinists whose work we believe can not be excelled in any shop. The result of all this is a line of extractors so perfect that they have driven almost everything else out of the market.

We make all sizes, from the little Novice non-reversing machine up to the 6 and (on order) 8-frame reversible Cowan. The cross-arms and exposed gear-work are covered with a baked japan, and the cans are beautifully enameled with a transparent blue. These, together with a tastily arranged lettering, give a very pretty effect.

For the cans proper, we use galvanized iron throughout, as it is more durable, and does not rust; and, contrary to the notion of a very few, the metal does not in the least affect the honey. Throughout California and the West generally, extracted honey is stored in large galvanized cans, and even if it be admitted that this metal would slightly affect the honey stored in it, such injury could not possibly take place during the few moments that the honey is running out of the combs and out of the can into the receptacle.

The bottom of our extractor-can is cone-shaped—highest in the center—and lower at the side next to the gate, so that every drop of honey will run out. The honey-gates are made very ample, so the honey can escape as fast as or faster than it can come from the combs. The top is stiffened with a good substantial iron hoop which is further stiffened by an iron cross-arm supporting the gearing. This latter is of the beveled form, bringing the handle clear to one side, thus giving the utmost possible room for the insertion and removal of the combs. The gear-wheels are protected by means of a metal shield, rendering it impossible to catch aprons, baby fingers, etc. The baskets, or reversing-pockets, are thoroughly braced and stiffened, so that they will stand the strain of the thickest and heaviest honey from California or Colorado or from any part of the world. The reels are thoroughly well braced, and galvanized throughout.

A ball bearing is used on all the large sizes of our Cowans, and is situated under the beveled gear and top of the cross-arm, at a point where it will support the entire revolving mechanism with its reversible pockets. This brings all the heavy strains upon a train of balls clear above the honey and wax, reducing friction and wear to the lowest point possible.

In the 4, 6, and 8 frame size of extractors we furnish a powerful street-car band brake applied direct to the center-shaft. This is a great convenience and almost a necessity, for it saves the strain on the gearing, and allows one to stop or slow down the machine, almost instantly, for the purpose of reversing, and that, too, by a slight pull on the brake-lever.

FIG. 58.—NOVICE AND COWAN EXTRACTORS.

Fig. 58 shows the relative sizes of our three principal machines. They weigh respectively 25, 45, and 117 pounds, uncrated, and the diameters of the cans are, respectively, 17, 20, and 28 inches.

We have one other standard size not shown in the picture, which is 31 inches in diameter, and weighs 180 lbs.

The Novice Extractor.

This is the smallest machine for handling L. frames that we make. It is intended for the use of those who have only a small number of colonies, and who desire a good, well-built, serviceable machine at a moderate cost. In every respect this machine is built as well as the large ones. Being so small and light, it can be very easily lifted and carried around, and some even use it for working in their out-apiaries. But the machine, however, is not reversible; that is to say, the combs have to be taken out of the extractor and put back again before all the honey can be taken out—an operation that consumes considerable time, and requires an extra handling of the combs. For that reason we strongly urge, for those who have fifty or more colonies, to pay a little more money and get a reversible two-frame Cowan. It is only 3 inches larger in diameter, and costs only $3.00 more.

Fig. 59.

The Novice, like all other extractors, is galvanized throughout, except that the brace-work to the pockets is made of tin.

Price List of Novice Extractors.

In ordering odd-sized extractors, give outside dimensions of frame and length of top-bar.

No. 4.—For all frames 13 inches or less in depth and 13¾ inches or less in width (wt. 50 lbs.)	$8 50
No. 5.—For L. or Simp. frame standing on end, or any other frame not over 9½ in. deep, or 18¼ long, top-bar 20 in. (wt. 45 lbs.)	8 50
No. 7.—For frames deeper than the L., but not over 11¾ in. deep (wt. 60 lbs)	9 50
No. 10.—For still deeper frames not over 13¾ in. deep, or 18½ wide (wt. 60 lbs.)	9 50

Any above numbers with milk-can handles, 25c extra.

Any above numbers with 60 lbs. space below, 50c extra.

Any above numbers with 100 lbs. space below, $1.00 extra.

The weights given are for machines well crated to go by freight. We can crate 10 lbs. lighter for express.

Dimensions of frames given are *outside* measure. To avoid mistakes, *always* give the size of your frame *outside* measure; also the length of top-bar. Where no size or number is given, nor anything as a guide, we will send machine for L. frame, as that is the American standard. This applies also to Cowan extractors.

The Cowan Rapid Reversible Extractor.

This is our most popular extractor, and justly so, as it is capable of handling the product of 500 colonies as well as a tenth of that number; and some bee-keepers even aver that they would rather have this two-frame than the larger four and six frame sizes, because it is so light, and easily within the range of one-man power. It employs the well-known Cowan principle of reversing—a principle that has been in use very largely for a period of ten years now, and has stood the most exacting tests. While it is not automatic, yet it is more rapid and much more simple, and hence the name, "Cowan Rapid." After the combs are once inserted in the machine it is not necessary to stop it, but only to *slow down* the motion to reverse. All the so-called automatic reversing-devices that have been hitherto put on the market require a complete stoppage of the machine.

The pockets holding the comb are hinged at the top and bottom on one side, so that reversing is accomplished by slowing down the machine by means of the handle with the right hand, and with

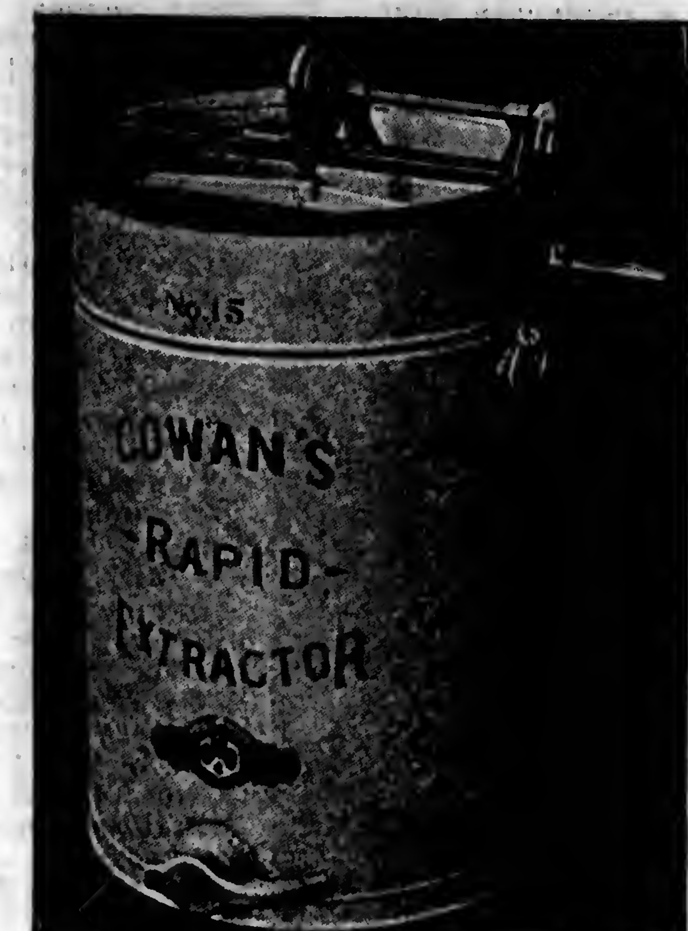


FIG. 60.—TWO-FRAME COWAN.

the left, while the reel is revolving, catching one basket and then the other, turning them other side to. The machine is then speeded up again to full motion, extracting the other side. After the knack is once acquired it is very easy.

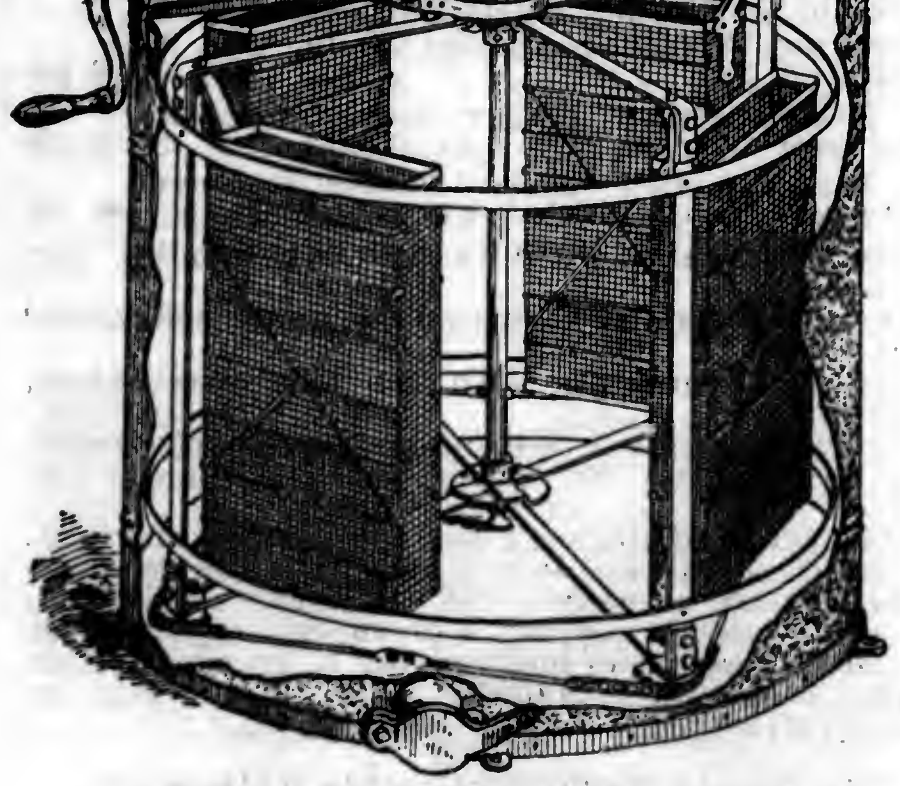


Fig. 361.—Reel of Four-frame Cowan.

The four and six frame Cowans are the ones usually selected by bee-keepers owning 500 colonies or more. They are large and powerful, and there is no question but they will handle the product of the most extensive bee-keepers more economically than the smaller machines: For the four and six frame sizes the reversing mechanism is something of an improvement over that in the two-frame size. All the pockets are geared together as shown in the illustration, by means of sprockets and chains, so that when one pocket is reversed they are all reversed at one and the same time, and, like the two-frame size, the big machines may be reversed by merely slowing down the motion. The reduction of speed is accomplished by the street-car band brake already described.

Price List of Cowan Extractors.

No. 15.—2-frame Cowan for L. frames; comb-pockets, 9⅝ in.; diam. of can, 20 in. (wt. 70 lbs.) $11 50
No. 17.—2-frame Cowan, for frames not over 11⅝ inches deep, 23 in. in diameter (wt. 90 lbs.) 12 50
No. 18.—2-frame Cowan, for frames not over 12 in. deep, 24 in. in diameter (wt. 120 lbs.) 13 50
No. 20.—2-frame Cowan, for frames requiring larger than 24-inch can 16 00
No. 25.—4-frame Cowan for L. frames, 28 in. in diameter (wt. 150 lbs.) 23 00
No. 30.—6-frame Cowan for L. frames, 31 inches in diameter (wt. 180 lbs.) 30 00

The Dadant Uncapping-can.

Price $8.50; weight for shipment, 56 pounds.

This is made up of two 20-inch galvanized cans, one telescoping into the lower; and, like the extractors, are enameled in transparent blue, and lettered. The upper can holds the cappings, and the lower the drippings of honey as they percolate through the screen bottom that supports the cappings. After the accumulations have drained off for several days, they may be removed from the upper compartment, and dumped, and the honey may be drawn off from below. A wooden frame with two arms extends across the top, and is at a convenient height. Centrally through the intersecting piece at one end passes a screw which may be lowered or raised and the end of which is sharpened to a point. On this point the frame to be uncapped is pivoted, so that one side or the other can be turned very readily for the knife. The cappings, as they fall, easily pass down between the two side arms, dropping on to the screen below. The honey-knife can be readily scraped on the wooden arms in the manner shown in the illustration, without dulling the edge.

HONEY-KNIVES.

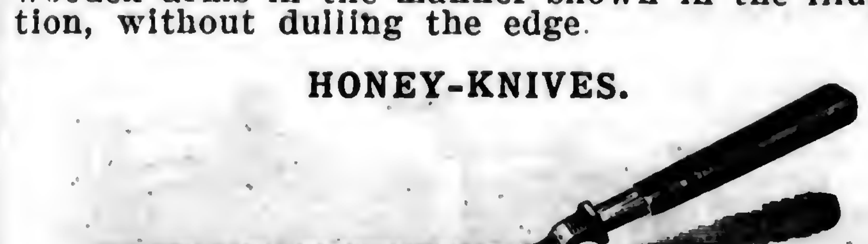


Fig. 62.—Novice honey-knife; 80 cts. each; postage 5 cts.

This is by no means equal to the Bingham for uncapping alone, but useful for other purposes, such as scraping propolis off bottom-boards, covers, etc., for transferring and cutting chunk honey

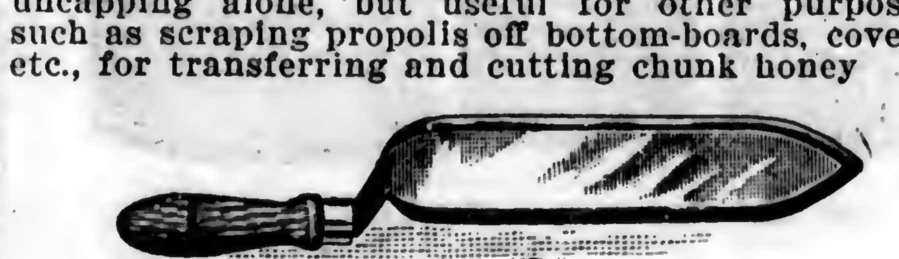


Fig. 63.—Bingham Uncapping-knife; 70 cts. each; postage 10 cts.

This knife is altogether the best for uncapping. It is made of the best American steel; and, as the cap-catcher isn't used, no holes are provided for holding it.

PERFORATED ZINC.

Fig. 132.—Root-Tinker Perforated Zinc.

During the year 1901 we made a complete set of new dies of the Tinker pattern for the large Root machine. We are now able to produce Tinker zinc, the finest product ever turned out for the purpose, and at the same price as the cheapest. The holes are very long, and 165-1000 wide. We guarantee them to be accurate and queen-excluding. Our new Root-Tinker has from 10 to 30 per cent more air-space to the square foot than any other zinc on the market; it is, therefore, especially adapted to entrance-guards and Alley traps, affording all the ventilation possible to secure.

Price List of Perforated Zinc.

Strips, two rows holes, 15-16x18 to 19⅛, $1.20 per 100.

Sheets, 28x96 inches, each $1.50.

Cut pieces, 10c per square foot; by mail, 10c per foot extra, or 1c each extra in strips.

Honey-boards.

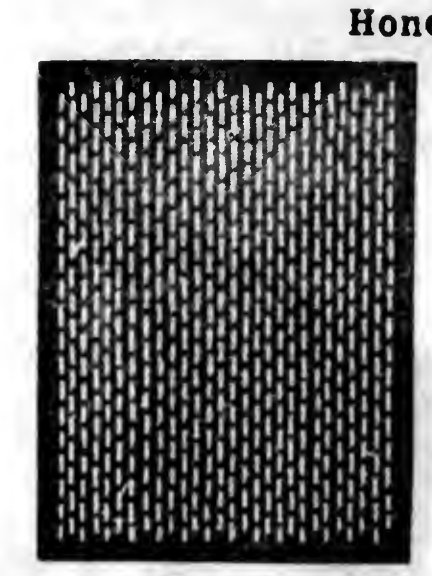


Fig. 35.—Nos. 1, 11.

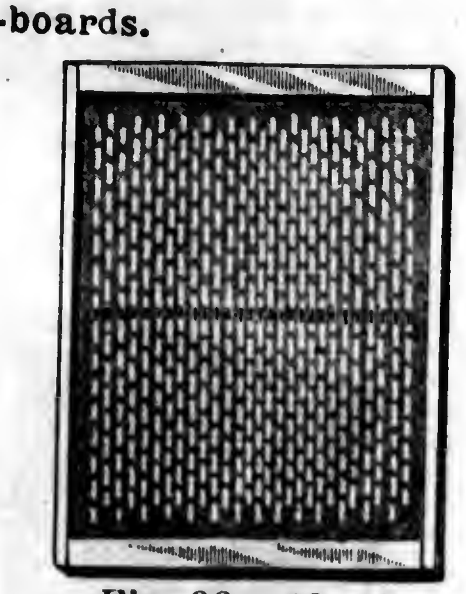


Fig. 36.—12, 13.

Honey-boards are used to confine the queen to the brood-chamber, and are very generally used in the production of extracted honey. Nos. 1 and 11 are of unbound zinc, and are placed directly on top of the frames, and allow the bees to pass through the holes directly over the spaces between the frames. Nos. 12 and 13 are wood-bound, with a bee-space one side, and reach to the outside of the hive. When placed on the Dovetailed or other similar hive there is a bee-space above and below the zinc.

Fig. 64.

Nos. 9 and 10, shown in Fig. 64, are the most satisfactory honey-boards in the list, because they are more rigid preserving more accurate bee-spaces. These have strips of zinc with two rows of holes between each two slats, which allow free passageway to the bees.

Price List of Honey-boards.

No.	NAME AND SIZE.	Price of 10.	Weght of 10.
1	10-frame unbound zinc, 14×19⅛	$1 50	9 lbs.
11	8-frame unbound zinc, 12×19⅛	1 30	8 "
9	8-frame wood-zinc, 13⅞×20	2 00	13 "
10	10-frame wood-zinc, 16×20	2 20	14 "
12	10-frame wood-bound zinc, 16×20	1 80	11 "
13	8-frame wood-bound zinc, 13⅞×20	1 60	10 "

Nos. 9 and 10 not put together, 2c each less.

For unbound zinc honey-boards larger in size than No. 1, add 20c for setting the machine; then for each additional inch or fraction thereof *in width*, add 1c each; longer than 19⅛ and not over 21 inches, add 1c each; longer than 21 and not over 22½ inches, add 2c each; longer than 22½, and not over 24, add 3c each.

Bee-entrance Guards of Root-Tinker Zinc.

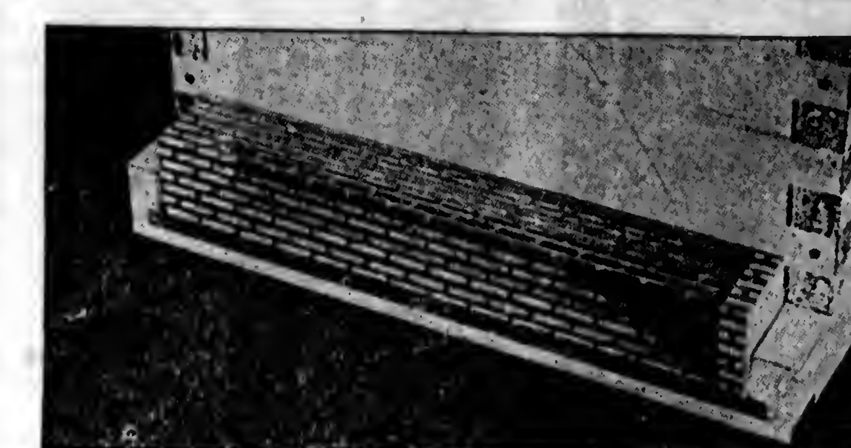


Fig. 333.

Price 13c each; 10 for $1.00, not prepaid. Postage 5c each extra. They are regularly furnished 12 inches long, to fit between the side rails of the eight-frame bottom-board. We can supply them 14⅛ long, to fit the ten-frame hives, at same price, when so ordered.

When in use they are placed in front of the entrances for various purposes. They may be used in swarming time to prevent the queen from going out, or on the hive whose drones are not such as one wants to breed from during queen-rearing. They may be used for ridding the hive of undesirable drones by placing on the hives and shaking all the bees in front, allowing the workers to pass in, while the drones are left on the outside and then destroyed. Be careful, however, to see that the queen is safe.

Alley's Queen and Drone Trap.

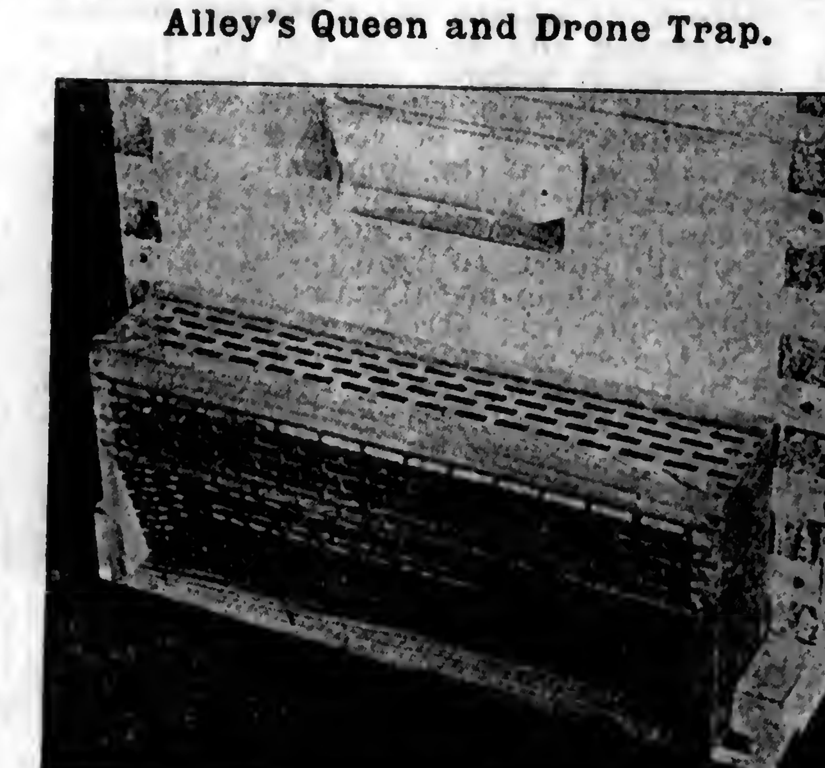


Fig. 334.

Price 50c; 10 for $4.00; by mail, 15c each extra.

This trap embodies all latest improvements made by the inventor, Mr. Alley, and leaves but little to be desired. Directions for use are attached to each trap.

It is designed to automatically catch and cage the drones in an apartment by themselves. They can then be carried to another apiary, or be destroyed, as circumstances require. The trap will also catch the queen when a swarm issues, and hold her confined until the apiarist can give her his attention. As she can not get away, the bees will in all likelihood return into the hive.

SMOKERS.

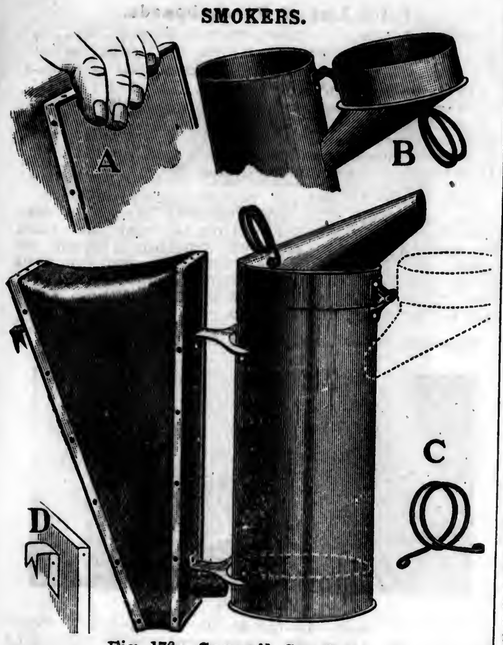


Fig. 176.—Corneil Smoker.

Our 1903 improved Corneil smoker with its new snout is a most decided improvement over the one we have been putting out for a few years back. The old nozzle or snout was somewhat top-heavy, having a tendency to tip over or flop open at a most inconvenient time. The new one is not only neat in appearance, but will hold its position on top of the stove without danger of toppling over, no matter how roughly used. There is no reason why the nozzle or snout should be large and heavy, having a capacity that is rarely if ever utilized; and our new snout is compact, simple in design, and yet serves perfectly the purpose of deflecting the smoke at an angle from the stove. Like our last-year pattern of nozzle, it is hinged for convenience in opening and closing, but in front instead of the rear, as before. See dotted line. A very neat wire-coil handle, which will remain cool under any circumstances, is riveted securely in place on the back side of the snout at a point that is most convenient for lifting and shutting the cap. It opens so easily that it will not be necessary to bang or pound the nozzle to open the smoker. The legs are of skeleton sheet-metal stamping, extremely light in weight, but very strong and rigid. They are riveted to the stove and bolted to the bellows-board. No matter how rough the usage, these bolts and rivets will not let go. The shield has been omitted, as we learned by experience the cylinder comprising the stove burns out under the shield, destroying the actual life of the metal itself. The blast is the same well-known Corneil principle, involving the use of a supplementary tube by which the volume of the blast is increased. The bellows itself is metal-bound, a feature which will be greatly appreciated by our customers for several reasons. It serves to increase the life of the bellows, protecting the leather edges from wear; prevents absolutely the warping of the bellows-boards themselves, and the binding is of such construction that it forms a very convenient hold to the bellows-boards while the smoker is being operated. This feature enables us to reduce the tension of the spring, permitting of a bellows that will respond instantly with a good strong blast, and yet the action is perfectly easy.

We make three sizes of this smoker; viz., a Jumbo with 4-inch stove, Standard with 3¼-inch stove, and a Junior with 2½-inch stove.

Table of Prices of Corneil Smokers.

Jumbo Corneil, 4 inch.....$1.25 each; 3, $3 45; postage, 25c
Standard Corneil, 3¼-in. .85 " 3, 2 25; " 25c.
Junior Corneil, 2½-inch.. .65 " 3, 1 80; " 25c.

Patent applied for on several new features.

Our Breech-loading Vesuvius Smoker.

We have it at last, a practical-working hot-blast breech-loading smoker; and perhaps it may not be too much to suggest that what the breech-loading feature has been to firearms, it will also be to some extent to a hot-blast smoker. The new implement is constructed along the same general lines as our muzzle-loader Corneil above described. It has the same style of nozzle or snout, but it is fastened permanently to the stove; in fact, it is part and parcel of it. The filling of the smoker is effected through the removable breech, having the same convenient wire handle that we use in the top-opening smoker, so that the breech can be removed at any time for the purpose of filling without burning the fingers. To fill, turn the smoker upside down; remove the breech, fill with fuel up to within an inch and a half of the top, or what is now the top; light; and, when the fire is fairly well going, shove the breech with its grate into place; turn the smoker right side up. The fire will now be underneath the unburnt fuel—just where it should be to cause a good, strong, dense volume of smoke. In the top-opening smokers it is often difficult to light the fuel because the fire has to be built from the top; and very often, when such a smoker is lighted, it will go out; but in a breech-loader the fire will always be at the bottom when first lighted. After the fuel has burned out, the live coals may be left in the smoker, in which case the fuel can be shoved down on to the coals now in or near the snout. As a rule, it is recommended to pour all the unburnt embers out, leaving the smoker clean; fill with fuel, then, if desired, scoop some of the live coals that may have been dumped on the ground back into the smoker and insert the breech. Such procedure will always result in giving a good clean smoke without sparks. In any event, we believe this to be the most easily lighted smoker of any hot-blast that has ever been put out.

Fig. 175.—Vesuvius Smoker—3¼-inch. (Patent Pending.)

Price, each, $1 00; three, $2.70; postage, 25c.

Aside from the breech-loading feature there is another very important one; and that is, that the nozzle or snout being fastened permanently to the cylinder of the stove will not allow any escape of the smoke except at the proper opening. All top-opening smokers leak more or less of smoke around the line of contact where the cap joins on to the stove. This difficulty is entirely overcome in the breech-loader, with the consequence that the blast is necessarily increased. Again, as a rule, the removable breech will be cool because it is under the fire, and the heat has a tendency to rise away from it; while in the muzzle-loading smokers the cap will necessarily heat to a considerable extent.

Another feature that will be prized is the fact that the grate is always removable with the breech, and can very easily be kept clean and clear. In the ordinary muzzle-loaders the grate, if removable, must be fished out—a difficult procedure to say the least.

We make this smoker in one size only, and furnish it only when specially called for. While we believe it will be more durable, that is, longer-lived than our other smokers, it is somewhat of an experiment so far as the public is concerned, as it has never been tried outside of a limited circle of our friends, who are unequivocally loud in its praise.

The Clark Cold-blast Smoker.

There was a time when the cold-blast principle in smokers was regarded more favorably than now; but long experience has shown that the hot-blast

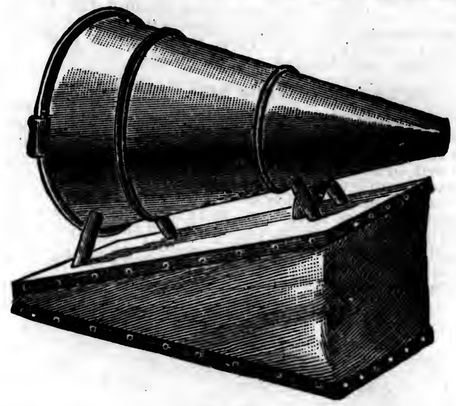


Fig. 77.

smokers are far more effective. We are prepared to furnish the Clark as formerly, but we strongly urge our customers to get one of the small-sized hot-blast smokers instead.

Price List of Clark Cold-blast Smokers.

Each, 55 cts.; 3 for $1.50. Postage, 20 cents each extra.

The Bingham Smoker.

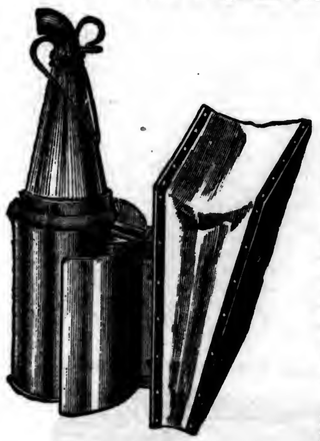


Fig. 78.

This is strong, well made, does not clog up, and burns any fuel. It has recently been improved by the addition of a curved snout to prevent fire dropping, and a safety attachment prevents burning the fingers in removing the hot cone for replenishing. The four larger sizes have wide shields; the two smaller have narrow shields. All have wire handle to cone, and inverted bellows.

Be sure to add postage to the price when you order smokers by mail.

Price List of Bingham Smokers.

BINGHAM SMOKERS. Name.	Size of barrel.	Postage.	Price of 1	Price of 3
Smoke Engine	4 inch	25	$1 25	$3 45
Doctor	3½ "	25	85	2 40
Conqueror	3 "	25	75	1 95
Large	2½ "	25	65	1 65
Little Wonder	2 "	15	50	1 35

The three largest sizes have the new hinge nozzle, and are also made in brass at 25 cts. each extra.

The Coggshall Bee-brush.

Fig. 80.

Price, 15 cents; by mail, 21 cents.

This is a sort of whisk broom especially made for brushing bees. The strands are thinned out and are longer than ordinary hand brooms so as to give a soft, pliable, easy sweep of the combs. For the wholesale brushing of bees off combs in extracting, it is one of the best implements we know of. It is used and recommended by the most extensive bee-keeper in the world, Mr. W. L. Coggshall, of West Groton, N. Y. To use, lay the brush flatwise against the comb and give it a quick, sharp, lateral sweep in such a way that the strands of the broom will be parallel with the end bar and will lie flat against the surface of the comb. It is not intended that the combs be swept with the ends of the strands as one should sweep a floor. When used as directed it makes one of the most serviceable and satisfactory brushes for cleaning combs we know of.

The Dixie Bee-brush.

Fig. 79.

Price, 15 cents; by mail 20 cents.

While some might prefer the Coggshall, others would use in preference this. It is a double brush with a strong wood handle, put together with brass nails to avoid rust. The strands are soft and pliable to give an easy, gentle sweep. The brush is long enough to reach clear across an ordinary Langstroth frame, and one or two sweeps ought to clear the comb free from all bees.

Tent for Setting Over a Hive.

Fig. 70.

Price $1.75; weight, 6 lbs.

These are for the purpose of enabling us to go on with such work as introducing queens, transferring, etc., when robbers get so troublesome that we could not go on with work otherwise. After the middle of July we are obliged to use them almost constantly in our apiaries, and we could not possibly get along without them. They are made so as to fold up and put away, or for transportation, and weigh only about 6 lbs. all complete. The dimensions of the tent are 5 feet long, 5 feet wide, and 5 feet high.

Manum's Swarm-catcher.

Price, with pole, $1.10; without pole, 80c.

We've tested and examined many swarm-catchers, but have never found anything that would begin to compare with the Manum. It is simply a wire-cloth basket with a lid to close it. To hive a swarm whose queen is at large with the bees, open the basket as shown; push it up around the swarm of bees, jar the latter off the limb, and close the lid by raking it against a lower limb so as to throw it over on top. Half or two-thirds of the bees will be in the basket. Adjust the legs of the tripod so that the basket will be suspended in the air where the bees are flying the thickest. They, attracted by the bees inside, will cluster on the outside of the basket. While the bees are clustering prepare the

hive, if you have not already done so. This done, go back to the catcher, which you will find has caught all the bees. Very gently lift up the two front legs of the tripod, fold them against the main bar, and then carry the whole to the empty hive;

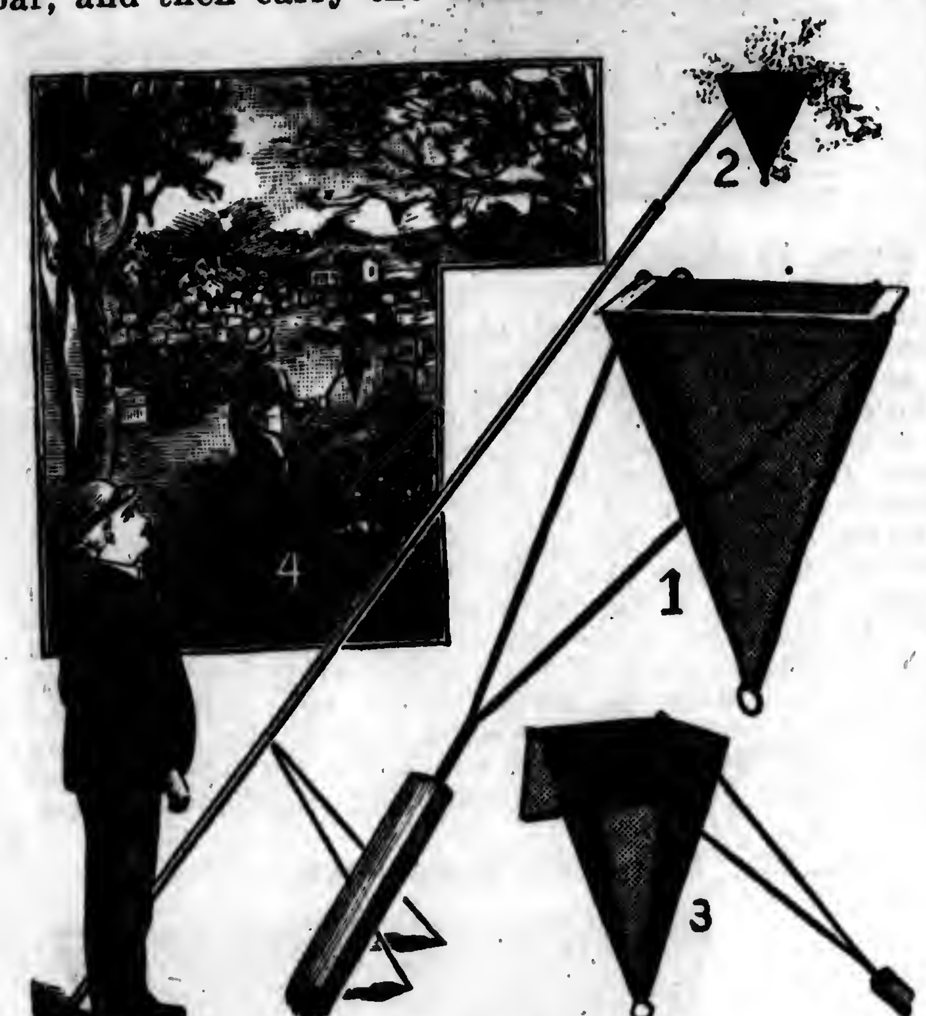


Fig. 71.

invert the basket, and dump. Close the hive, and the hiving is done. This device will reach a swarm twenty feet from the ground; it is light, and easily handled. After the bees are once in the basket they can not escape, and the prisoners will draw the others. The great feature of the device is, that it will stand alone, and hold the basket where the bees are flying the thickest, without any one holding it, while the apiarist in the meantime is preparing a hive elsewhere.

Veils to Protect the Face.

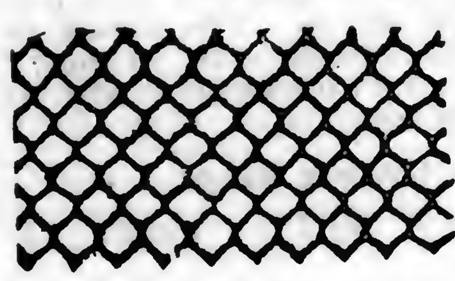


Fig. 72.

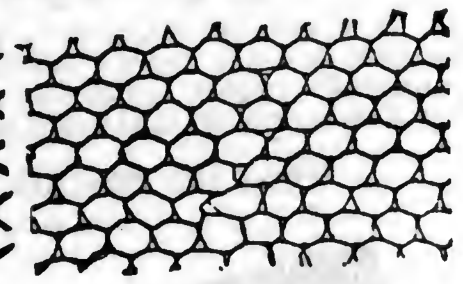


Fig. 73.

Our veils each contain 1½ yards of the best material for the purpose. They are well made with rubber cord in the top to fit around the hat, and the lower edge is bound to prevent the fraying. Three kinds of material are used. Figs. 72 and 73 show the silk and cotton tulle, or brussels netting, as it is sometimes called. The silk tulle before the eye is as near invisible as anything made, and it is also strong, and will wear well if used just before the face. Mosquito bar is also used in cheap veils, but it does not wear well. A veil made entirely of silk tulle weighs only a fraction of an ounce, can be put in the vest pocket, and is the coolest and easiest veil of all to wear. The hat shown in Fig. 74 is a light cloth, with wire in outer edge of brim, and cord in inner edge, making it adjustable to any sized head.

Fig. 74.

The higher-priced veils are, of course, the best, but we can suit the pocket-book of all. Our choice is in the order given.

Globe Bee-veil.

Sent by mail for $1.00; extra nets 50 cents each.

This is one of the most popular veils that we sell, and where one is very timid and wishes something that holds the net clear away from the face and neck, and yet will allow him to wear an ordinary hat, we know of nothing better. After it is put on the coat or vest should be folded around the bottom edges to prevent the bees from crawling up on the under side.

Five cross-bars of light spring steel are riveted in the center at the top. These are bent down and secured to a brass rim that goes around the neck. The netting is black cotton tulle with a face piece of silk to see through. It is packed in a case 1x6x7 inches and weighs only 5 ounces.

Price List of Veils and Materials.

No. 1 veil, made entirely of silk tulle	80c
No. 2 veil, cotton tulle with silk tulle face	50c
No. 3 veil, cotton tulle throughout	40c
No. 4 veil, of mosquito-bar entirely	25c
Bee-hat, flexible rim, fits any head	25c
Silk tulle, 24 in. wide (8 yds. weigh 1 oz.) per yd	50c
Cotton tulle, 24 in. wide (post. 2c per yard)	20c
Mosquito-bar, 66 in. wide, per piece of 8 yards	60c
Silk tulle for face of veil, 9x12	10c

Veils and silk tulle sent postpaid at above prices.
Postage on full-piece mosquito-bar, 15c.

Porter Bee-escape.

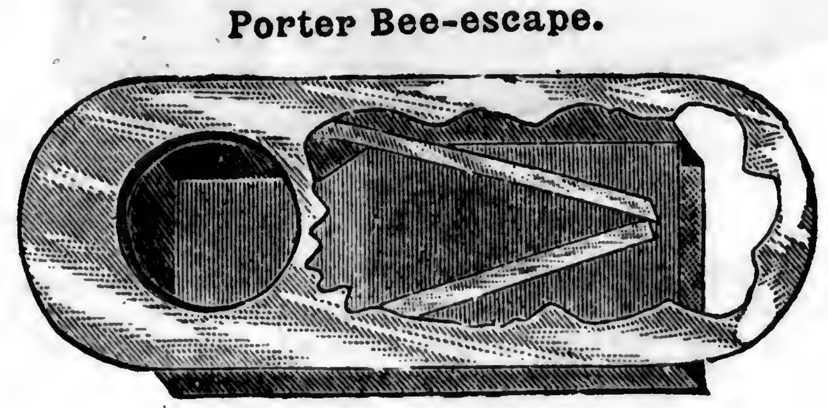
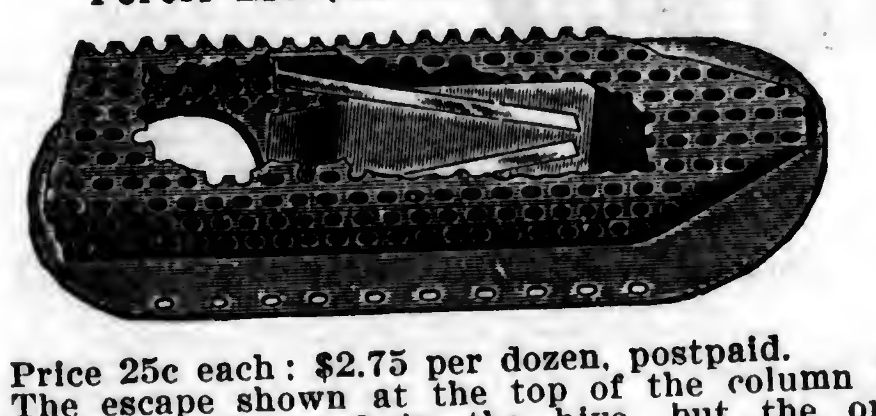


Fig. 81.

Price 20c each; $2.25 per dozen, prepaid.
Price with board, 35c; $3.20 for 10, not postpaid.

No well-regulated apiary can afford to be without bee-escapes any more than it can afford to be without a bee-smoker. We have investigated a great many different forms of escapes, but after experimenting and testing them all we have come to the conclusion, like everybody else, that the Porter is very much the best. In taking off the honey it is the greatest labor-saver that has been introduced in late years. It avoids "breaking the back" in shaking heavy supers to get the bees out; does away with the cruelty of smoking the bees, and the uncapping of the honey attendant upon such a procedure; there is no need of receiving a single sting, and robbers stand no show whatever. If there are any broken burr-combs they are cleaned up by the bees *inside* of the hive before the honey is removed. All that is necessary is to slip an escape-board between the super and brood-nest or main part of the hive (say toward night), on each of the colonies from which you desire to remove the honey

Porter Escapes for Honey-houses.



Price 25c each: $2.75 per dozen, postpaid.
The escape shown at the top of the column is designed to be used in the hive, but the one above is especially made for use on doors and windows of work-shops or extracting-rooms or other places where bees get in, and it is desirable to get them out without the possibility of their returning. No extracting-room will be complete without one or more of them.

SHIPPING-CASES.

Having secured a fine crop of honey, it is sheer folly to put it in poorly made shipping-cases, such as your local planing-mills ordinarily turn out. Cases of this kind, as a rule, knock off anywhere from 1c to 2c per pound from the honey when it reaches the market. Such a policy is "penny wise and pound foolish."

No-drip Shipping-cases

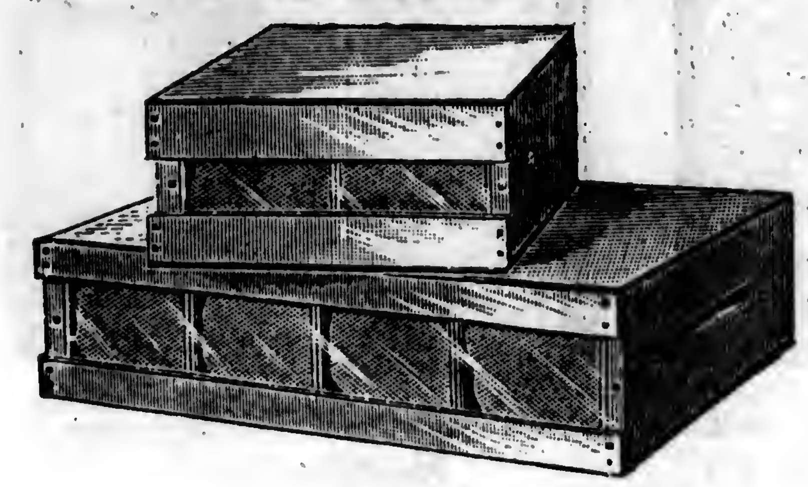


Fig. 84.

The *single-tier* shipping-cases are used now almost exclusively. While we can furnish the double-tier when called for, we would strongly advise taking the regular goods; for in such, as a general rule better prices are secured. The sizes used most largely are 24-lb. single-tier, 4 row; 12-lb. 2-row, and 12-lb. 3-row. All our cases are put up in flat in crates that may also be used for shipping comb honey.

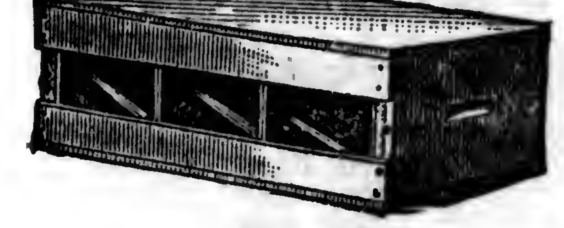


Fig. 85.

Notice—In making your order for 12-lb. cases, be sure to specify whether you want them 2-row or 3-row.

With each case we send two sheets of paper, one a little larger than the inside dimensions of the case. This is folded up into a paper tray as shown, and its purpose is to catch the dripping honey. The paper tray is inserted in the bottom of the case, and strips of wood (furnished with the cases) are laid in crosswise of the case, 4¼ inches from center to center, and fastened down with flour paste or other adhesive. When the sections are in the case this leaves a space under them so that if there is any drip it is caught in the tray, leaving the *other* sections high and dry.

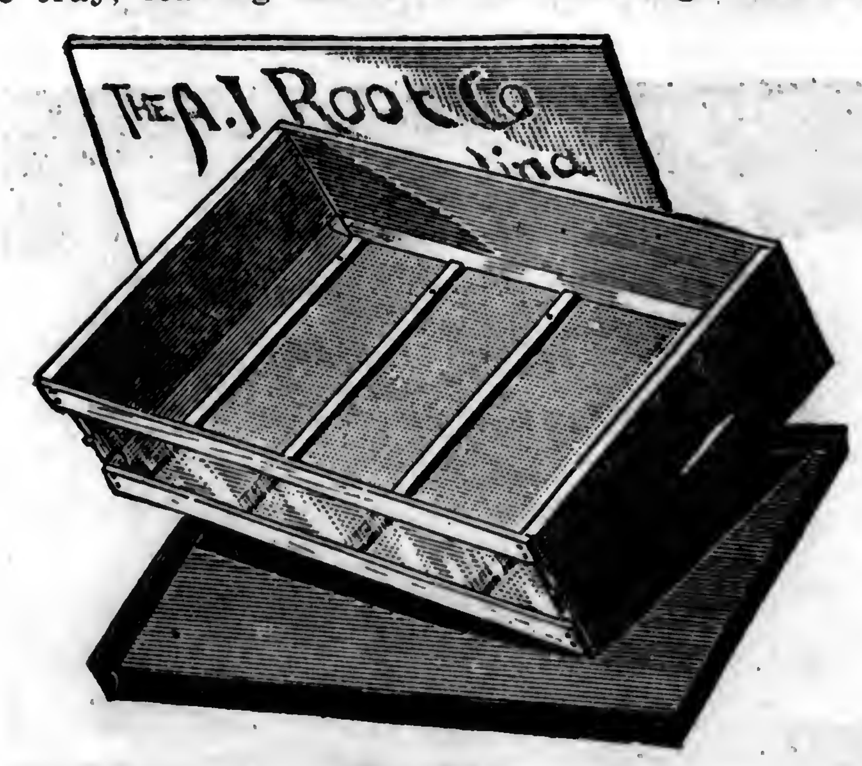


Fig. 83½.

Without the strips of wood the honey runs under the sections and sticks them to the paper like so much glue. The smaller sheet is spread over the top before nailing on the cover.

Price List of Shipping-cases.

The 12-inch 4-row case for 4¼-inch sections with followers will take 24 sections 1¾ to 2 inches wide, or 28 7-to-foot or 32 1½-inch.

The 10-inch 4-row will take 20 sections 1¾ to 2 inch or 24 of 1½-inch plain. The 12-inch 2-row will take just half the number of same widths as the 12-inch 4-row case. The 10-inch 2-row is just right for 12 1½-inch plain sections. The 16-inch 2-row will hold 16 sections 1⅞ or 2 inch, or 20 sections 1½ inch. The 8-inch 3-row holds 12 sections 1¾ to 2 inch, while the 6½-inch 3-row holds 12 1½-inch sections. All of the above mentioned are for sections 4¼ inches square, and are made for glass either 2 or 3 inches wide, and furnished with or without glass as ordered. If you do not specify which size is wanted, or indicate your choice in the price extended, we will use our judgment which to send. The 3-inch glass shows off the honey much better, but is more expensive than the 2-inch.

We furnish, besides, two sizes of cases for the 4x5x1⅜ plain sections, to take 20 and 15 each; also two sizes for the Ideal section 3⅝x5x1½ sections for 24 and 12. These are all made for 3-inch glass. A follower ⅛-inch thick is included with each case; and when the honey is packed in the case it should be wedged up tight with folded papers back of the follower to avoid breakage in shipping; also to provide a way for easily removing the first row of sections.

Cases are designiated by the length in inches of a row of sections, and the number of such rows that can be placed in a case.

SHIPPING-CASES. NAME AND SIZE OF CASE.	Nailed, each.	Price complete including 3-inch glass 1 side, nails, & paper, in flat. 1	10	100	With 2-inch glass instead of 3, per 100.	Without the glass per 100.	Wt. per 100—in lbs.
12-in. 4-row for 4¼ s'n	30	22	1 80	$16 00	$15 00	$13 75	450
10-in. 4-row "	30	22	1 70	15 00	14 00	12 75	400
12-in. 2-row "	20	15	1 20	10 00	9 50	8 75	225
10-in. 2-row "	20	15	1 10	9 50	9 00	8 25	200
16-in. 2-row "	25	16	1 30	11 00	10 50	9 75	300
8-in. 3-row "	20	16	1 20	10 50	9 75	8 75	225
6¼-in. 3-row "	20	15	1 10	10 00	9 25	8 25	200
7⅛-in. 4-row for 4x5...	30	20	1 70	15 00		12 75	300
7⅛ in. 3-row " ...	25	18	1 30	11 00		9 50	250
9¼-in. 4-row for 3⅝x5	30	20	1 70	14 50		12 50	350
6¼-in. 3-row "	20	15	1 20	10 00		8 50	200

Those using only one width of sections, who prefer, may have cases made for that width in lots of 50 and upward at regular prices, direct from factory. In ordering designate the width of case in inches, and number of rows of sections.

Write for prices of cases for other-sized sections.

Price List of Glass for Shipping-cases.

DESCRIPTION.	Price. 10	100	Bx. of 50 ft. No.	Price.
3x16 for 4-row cases	30	$2 00	150	$3 00
3x12 for 3-row cases	20	1 50	200	3 00
3x9 for 2-row cases	15	1 25	267	3 00
2x16 for 4-row cases	20	1 50	220	3 00
2x12 for 3-row cases	12	1 00	300	3 00
2x9 for 2-row cases	10	75	400	2 50

Most of the 2-inch glass is double-strength, requring a wide groove in the glass-strips to receive it.

We take special pains to pack glass for safe shipment, and can not be responsible for breakage.

Glass strips in cases are grooved, with an end-block to slip into the grooved strips at each end of glass.

Pasteboard Boxes or Cartons.

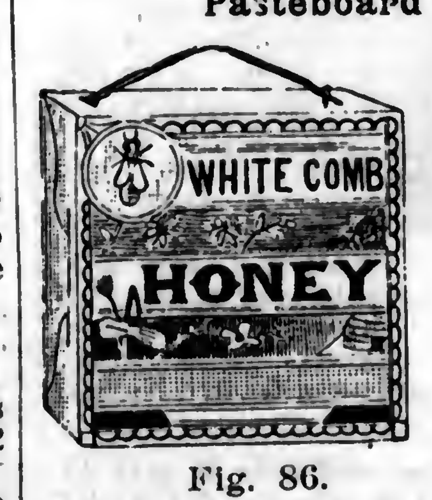


Fig. 86.

Bee-keepers are realizing more and more the value of these cartons for putting their comb honey into marketable shape. Other articles of home consumption are put up in a neat, attractive way, and in shape to be handed to the customer, and carried safely without wrapping. Why not sections of comb honey, especially when the cost of the boxes is so low? Cartons in stock are for 1½, 1⅞, and 1 15-16 sections, 4¼ inches apart.

Table of Prices of 1-lb. Cartons.

NAME OR DESIGNATION.	Price. 100	500	1000
1-lb. carton, plain, 1c each; 25 for 20c...	$ 60	$2 50	$4 50
1-lb. carton, printed one side, one color, name blank........................	65	2 75	5 00
1-lb. carton, printed one side, one color, name and address......................	1 10	3 25	5 50
1-lb. carton, printed two or three colors one side, or one color both sides	1 20	3 50	6 00

If sent by mail, postage will be 2c each; or in lots of 25 or more, 1c each. All the above have tape handles. Without tape, 50c per 1000 less. The quality of the boxes is fair, being made of strawboard, plated outside. If more than 1000 are wanted, write for prices.

Danzenbaker Cartons, Pat'd Jan. 2, 1900.

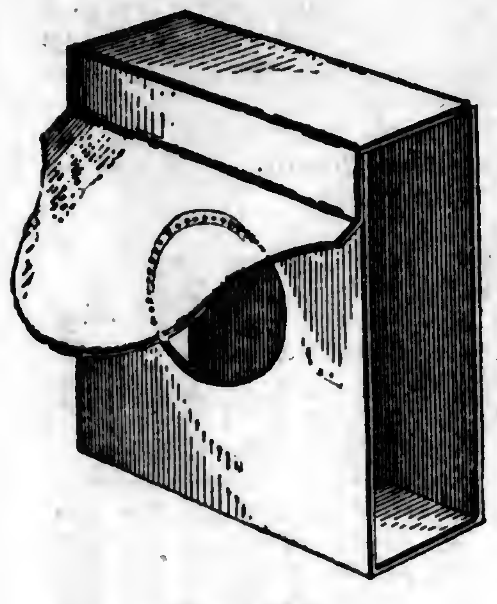


Fig. 187.

Fig. 188.

These are much simpler than the folding carton, and it requires much less time to place the honey in them, and sections having these cartons on may be packed in the regular-sized shipping-cases, while the other styles require extra-size cases. By placing a rubber band around they are closed up tight; and by raising the flap the honey may be seen without removing the section; but if it is desired it can be slipped out of the end very easily. We have these for the 4x5x1⅜ plain, the 3⅝x5x1½ plain, and the various standard widths of the 4¼ sections, at 100, 50c; 500. $2.25; 1000, $4.00. Larger quantities quoted on application.

Sturwold's Show-case.

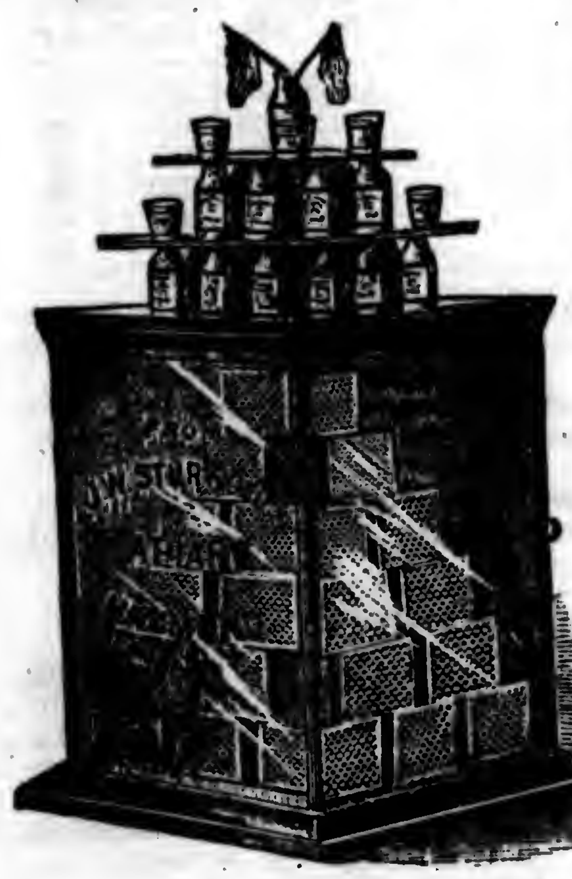


Fig. 87.

This case is 28 inches high and 20 inches square, outside measure, top and bottom. The glass of which it is made is 16 by 24. The case is to be set up in any grocery, drugstore, or any other place of business where you want your honey exhibited or sold. The frame is of chestnut, filled and varnished, and finished in natural grain. Price, plain, $5.00; with name and address, $5.50. As the glass is very apt to be broken in transit, we will ship them, if you prefer, with glass boxed separately, at the same price. In flat, no glass or finish, $2.50; glass included, $4.00.

☞ Sending honey on commission, and how to ship by freight or express, is fully explained in a leaflet furnished on application.

Glass Packages for Honey.

Fig. 192.
Square Jar.

Fig. 290.

Fig. 291.
Hershiser Jars.

These jars were designed for use in the honey exhibit at the Pan-American Exposition in Buffalo, and are very neat and attractive. They have cork-lined aluminum caps which seal them tight. They are made in four sizes square and three sizes round. The 1-lb. size in each style is shown in figs. 290, 291.

¼-lb. square	Hershiser	jars,	dozen,	50c;	$5.40	per gross
½-lb.	"	"	"	55c;	6.00	" "
1-lb.	"	"	"	80c;	9.00	" "
2-lb.	"	"	"	1.00;	10.80	" "
½-lb. round		"	"	60c;	6.60	" "
1-lb.	"	"	"	75c;	8.40	" "
2-lb.	"	"	"	1.10;	12.00	" "

The ordinary square jar to seal with cork, similar to that shown in fig. 192, is very largely used for honey. They are made in four sizes. The 1 and 2 lb. sizes are packed ½ gross in a package; the smaller sizes, 1 gross. Price, including corks:

5-oz. Square Jar	.......35c per dozen;	$3.25	per gross.
8-oz. "	.......45c "	4 25	"
1-lb. "	.......60c "	5.75	"
2-lb. "	.......75c "	7.50	"

No. 25 Glass Jar.

While the No. 25 jar is more expensive than a common tin-top tumbler, it is the nicest package we know of for one pound of honey. It is clear flint glass with porcelain top and tin screw-rim and rubber ring to seal tight. We have them

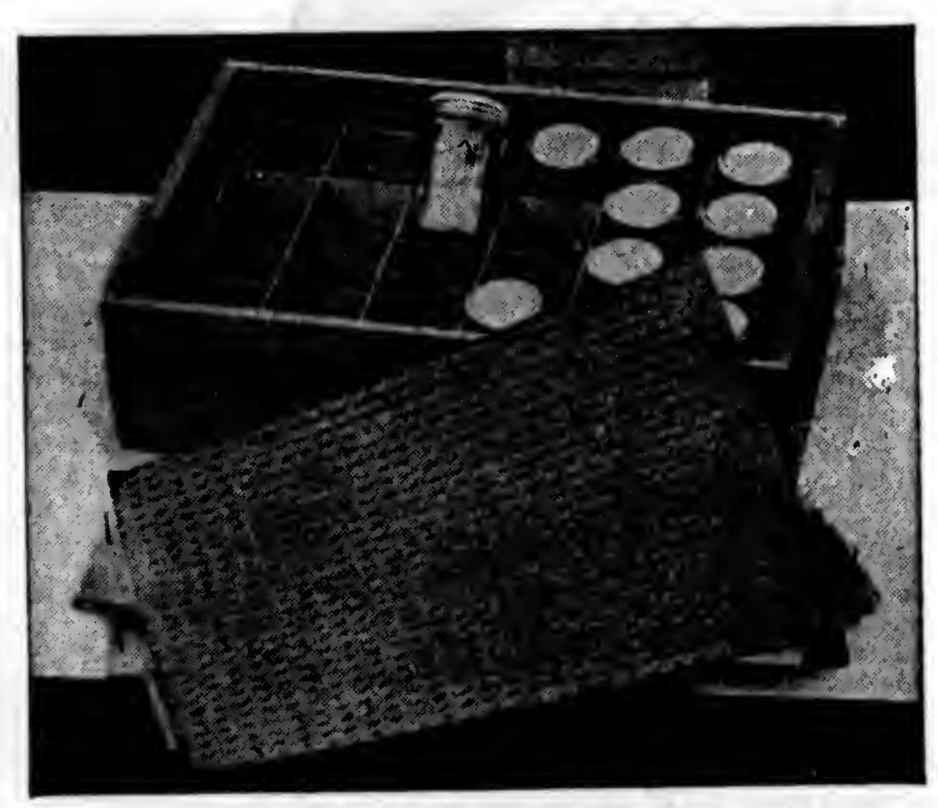


Fig. 394.—No. 25 Jar.

packed two dozen in a partitioned case, as shown, ready to ship safely when filled with honey, without additional packing. We furnish them also packed 12 dozen in a crate or a bbl.

Price 60c per 10; $5.75 per crate; $6.25 per bbl; $1.20 per box of two dozen; six boxes, $6.75.

No. 143, same style, holding about 14 oz., 25c per gross less than No. 25.

Tip-top Honey-jars.

This is a new-style jar sealed with rubber ring under rim of a glass top held securely with spring-top fastener. This fastener is applied to a great variety of bottles and jars used for different purposes. We have selected two styles among them all as being most suitable for honey. The 1 and 2 lb. square jars above may be had with spring top fastening instead of cork at 75c per gross extra. The style shown adjoining, called Tip-Top, we can furnish in two sizes.

½-lb.—45c per dozen; gross, $4.50.
1-lb.—50c per dozen; gross, $5.00.

Mason Fruit-jars.

These are very largely used for canning fruit, and are often used for honey as well. As we buy them by the carload, we can make the following prices at Medina, all put up complete with porcelain-lined caps and rubbers, in cases of one dozen:

SIZE.	Doz.	6 doz.	12 doz.
Pint...........	$ 55	$3 15	$6 25
Quart.........	58	3 30	6 50
½-gallon.....	75	4 35	8 50

Sample Mailing-blocks.

Price, each, 6c; by mail, 8c.

These are small wide-mouthed glass bottles, which hold ½ oz., with cork, put up in a mailing-block with top which screws on and is easily removed.

Tin Packages for Honey.

Fig. 96.—Five-Gallon (60-lb.) Square Cans.

The above cut shows the favorite package for shipping extracted honey. There is no shrinkage and consequent leaking, no taint to the honey from wood as is so frequently the case with barrels and kegs. The cans, being made square, economize space, and are easily boxed. They are used exclusively in the far West.

Price List of Square Cans.

No. in a box.	Capacity of each can in gallons,		in honey.	Price of 1 box.	Price of 10 bxs.	Wt. of 1 box.
1	5-gal.	can boxed	60 lbs.	$ 50	$ 4 80	10 lbs.
2	5-gal.	"	60 "	80	7 50	15 "
10	1-gal.	"	12 "	1 50	14 00	20 "
12	½-gal.	"	6 "	1 50	14 00	20 "
24	¼-gal.	"	3 "	2 40	23 00	25 "
100	1-gal.	"	12 "	11 00	100 00	110 "
100	½-gal.	"	6 "	9 00	80 00	80 "
100	¼-gal.	"	3 "	7 00	65 00	60 "

Honey-leaflet, "Food Value of Honey."

If you have not seen a sample of this leaflet, send for it. It should be distributed broadcast, everywhere, as its influence is to increase the consumption of honey. Ask for a leaflet, "Peddling Honey Made Easy."

Small Screw-cap Cans.

Fig. 97½.

Besides the five-gallon square cans shown above we list also the three smaller sizes—1, ½, and ¼ gallon. These are furnished with 1½-inch cork-lined screw-cap. The five-gallon cans have 1¾-inch screw-cap. We can also supply the five-gallon cans with 4-inch screw as well as the 1¾, at 5c each extra; and with an 8-inch screw at 15c each extra. Latter is largely used in Texas for chunk honey. Price of cans packed in boxes or crates given in the list above. Tin pails formerly listed here quoted on application.

Screw-cap Honey-gate.

Fig. 99.

Price 15 cents; postage 3 cents

We can furnish, when desired, a honey-gate to fit either a 1½, 1⅝, or 1¾ inch screw-cap. This is a great convenience for retailing honey, as the stream can be stopped instantly.

When you order these gates separate from cans we cannot guarantee a fit unless you send us a cap from the screw with the order.

The Favorite Family Scale.

Fig. 107.

12-lb. Favorite, $1.75
24-lb. Favorite, $1.75
48-lb. Favorite, $2.25
Weight, boxed for shipment, about 5 lbs.

This is a beautifully finished, accurate instrument for weighing honey or anything else; and it will weigh as close as a half-ounce without any trouble. The screw for adjusting the tare is right under the platform. Three sizes are furnished, weighing 12, 24, and 48 lbs. The 12-lb. is preferable when 12 lbs. is all you want to weigh, because there is more room for the figures and divisions.

240-lb. Victor Union Scale.

Fig. 109.—Double-Beam 244-lb. Scale, $3.75.

Fig. 108.—Single-Beam 244-lb. Scale, $3.00.

This is a very convenient scale for family use. It will weigh from ½ oz. to 30 lbs. in the scoop, and from ¼ to 244 lbs. on the platform, which is 10x13 inches in size. The extra beam in the double-beam scale is used for taking off tare, and is quite convenient. We can recommend the make we handle to be reliable and accurate. Boxed for shipment they weigh 50 lbs. each.

Simplicity Feeder.

Fig. 112.

This is to be filled with syrup made by mixing together granulated sugar and water in equal proportion by measure, and stirring or heating until thoroughly dissolved. This feeder may be placed at the entrance at night, over the brood-frames by placing on top of the hive, or in the brood-nest itself, if a couple of frames are removed. For stimulating, the division-board feeder is much the better.

The Doolittle Division-board Feeder.

Fig. 313.

This is the best and most satisfactory feeder we sell. Having the same outside dimensions as an ordinary division-board or brood-frame it can be used in the brood-nest in the same way. Its construction will be apparent from the illustration. To feed, all that is necessary is to shove the cover or quilt back just far enough so that the hole through the top-bar is exposed. Through this pour the feed from an ordinary coffee-pot or tea-pot; close the hive up, and the bees are thus supplied without exposing the cluster, and without the use of smoke to drive the bees down.

This feeder may be used for stimulating as well as for feeding up for winter, and for either purpose it is away ahead of anything else we sell. As it hangs down in the warmth like a brood-frame, the bees will take syrup from it when they would not from any other feeder. It holds three pints.

We sell it either in the flat or nailed up. When sent in the flat, after being nailed up it should be coated on the inside with hot wax or paraffine to make it tight, and to prevent syrup from soaking into the wood. Those we send nailed up are paraffined.

The Boardman Entrance Feeder.

Fig. 113½.

This is simply shoved up close to the entrance on one side — the spurs, or projections, extending far enough into said entrance to prevent robber-bees from without from passing the guards from within. It consists of a box with a hole in the top, to receive a 2-quart Mason glass jar inverted. The feed is given out to the bees on the atmospheric principle, through the screw top. This is perforated, so that the syrup will run out no faster than the bees can take it. As the feeding goes on, a mere glance shows just how fast the bees are taking the syrup, and when the jars will need refilling. Special caps for the lightning jar also furnished.

As the Mason jar is a common article in every household, and glass jars are liable to breakage most of our patrons will order only the box or lower part of the feeder with the special cap to fit the jars. Prices are made as in the table, with and without the jars. If you order the lower part alone, specify whether you want them to fit one or two-quart Mason jars or for lightning jars.

The Miller Feeder.

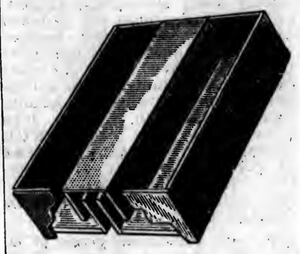


Fig. 115.

This is designed to be placed inside of the super or upper story on top of the brood-frames, and has two compartments for the syrup, the passageways for the bees being in the center through the bottom directly over the cluster of bees. For feeding anywhere from 10 to 25 lbs. of syrup at a single feed, we know of nothing better; and it sometimes happens that bee-keepers are careless enough to leave their feeding until the very last moment. Ordinarily we would recommend feeding in smaller quantities with the division-board feeder.

The France Pepper-box Feeder.

Fig. 114.

The pepper-box feeder which we have sold for the past 15 years has lately been given considerable prominence as the Hill feeder. It is simply a tin can with cover perforated full of fine holes. Fill the feeder and put on the cover, then invert it quickly and place it in the hive above or alongside the frames, giving the bees access to the perforations, which are now on the under side. We furnish it in two sizes—pint and quart.

Syrup for Feeding.

We advise only the best granulated sugar, as it makes the safest winter food, and it has been found that it contains more real sweet for the money. Cheaper sugars, sometimes such as brown or maple, or cheap molasses, may, in the colder climates, result in occasional winter losses. For warmer climates, the molasses that is made in the South will answer very well, especially if you happen to have a quantity on hand.

How to Make Sugar Syrup.

Mix granulated sugar and water, equal parts of each, by measure, and stir until it is all dissolved. The best way, if you desire to make a quantity, is to pour into the honey-extractor, if you have one, the requisite amount of water. Start the reel going, and, while turning, pour in dipperfuls of sugar, one at a time. This gives the sugar, as it is poured in, time to mix with the water while it is in motion. If you make the mistake of pouring the sugar in *first*, and the water *afterward*, you will make a poor job of it. After the sugar is all in—a quantity equal to the amount of water by bulk—turn the handle for four or five minutes more, to make sure that all the sugar is dissolved. At first the mixture will look a little cloudy, as if the sugar were not all dissolved; but this milky look is due to the presence of air-bubbles, which will pass off in half an hour, leaving the syrup clear and limpid.

If you are careless enough to let your feeding go till late, use four parts sugar and three of water, and ¼ pint of vinegar, or 10 lbs. of good honey, to the 100 lbs. of syrup to prevent granulation. It may then be necessary to turn the reel of the extractor a little longer. If you have no extractor you can use a tub or wash-boiler, and a stick to do the stirring; but it takes longer.

Price List of Feeders.	Price of 1	Price of 10	Weight of 10.
Simplicity feeder	6	50	3 lbs.
Division-board feeder, nailed	25	2 20	15 lbs.
Division-board feeder, in flat	18	1 60	15 lbs.
Boardman feeder, 2-qt., complete	25	2 00	20 lbs.
Boardman feeder, in the flat, without jar but with special cap	15	1 25	4 lbs.
Special caps only, for either Mason or lightning jars	10	75	1 lb.
Pepper-box feeder, 1 pint	8	70	4 lbs.
Pepper-box feeder, 1 quart	10	90	6 lbs.
Miller's feeder, nailed up	30	2 70	40 lbs.
Miller's feeder, in flat	25	2 30	40 lbs.

BEES AND QUEENS.

Fig. 101.

In connection with and directly adjoining our large manufacturing plant we have an apiary of 600 colonies; and this is further supplemented by outyards of 300 more. Many of these 900 are devoted to the rearing of high-class *honey* queens or queens for business. In charge of this department we have a queen-breeder of some 30 years' experience, careful and competent, and one who uses the latest and best methods of producing vigorous, healthy stock. None but *honey* queens are used for breeders (usually imported)—queens whose progeny have excelled everything else in the yard. Some of them are from our celebrated imported red-clover mother, the bees of which will excel anything else in the yard during the time that red clover is in bloom. Then we have a breeder whose bees stored 160 lbs. of surplus from clover and basswood, in a yard where there are already 650 colonies. A colony that can store as much honey as that in a locality so greatly overstocked is something remarkable, and hence the queen has been set apart as a breeder.

On account of the intrinsic merit of breeding stock and the pains we take in rearing our queens, we are compelled (to prevent being swamped with orders) to charge a slight advance over ruling prices.

PRICES OF RED-CLOVER AND HONEY QUEENS REARED IN THE ROOT CO.'S APIARIES, AT MEDINA, O.

Untested queen	$ 1 00
Select untested queen	1 25
Tested queen	2 00
Select tested queen	3 00
Breeding queens	5 00
Select breeding queens	7 50
Extra select breeding queens, 1 year old	10 00

Be sure to specify whether you desire a "red-clover" or a "honey" queen. The first-mentioned stock is bred for red clover; the last-named, or honey queens, show up well during an ordinary honey-flow from clover and basswood. We can not furnish these queens before May 15th (untested before June 1st) nor later than Nov. 15th. We are booking orders, and they will be filled in their season in rotation.

IMPORTED ITALIAN QUEENS.

We are prepared to furnish from the best breeders in Italy, imported Italian queens. They are put into our own yards and tested before sending out. We have only two grades—best and fair imported, and prices are given in the table below:

Best imported queens	$5 00
Fair imported queens	3 00

COMMON ITALIAN QUEENS.

For those who desire to get pure Italian stock at a moderate price we are prepared to furnish queens direct from our breeders in the South at the following scale of prices:

Untested queens	$ 75
Select untested queens	1 00
Tested queens	1 50
Select tested queens	2 50

If untested queens are ordered before May 15th the price will be 25c extra.

Full particulars regarding each grade of queens, with discount for quantity, will be sent free.

West Queen-cell Protector.

Fig. 117.

These are to prevent bees from gnawing into and tearing down cells given them at certain times of the year. When a choice cell with one of these is placed in the hive, it can be readily picked out from others that may have started up elsewhere in the hive. With them the apiary can be requeened during the swarming season at very little expense; and this, to a certain extent, will control swarming. Complete directions for use accompany each lot of cages. We also furnish spiral cages to be slipped over these cell-protectors, as shown in the cut at the right. They are designed to hold the virgin queen, after she hatches, till she can be disposed of. We can still supply the wire Doolittle queen-cell protectors.

Cages for Queens.

The first size is shown in the illustration, and it takes only one cent postage to send it to any part of the United States or Canada. We use this cage ourselves exclusively for the United States, except to some points remote from railroads, and except in cases where high-priced valuable queens are sent. For such we use what we call a long-distance Benton cage, which is the same thing as the one shown in the illustration, only it is larger, and

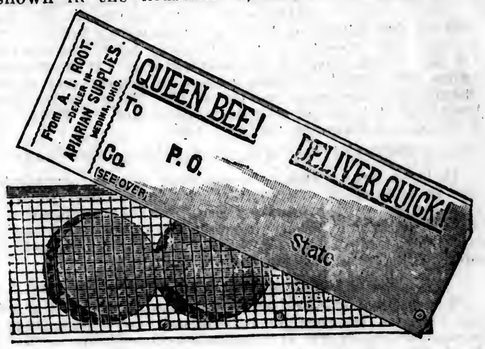


Fig. 116.—Small Benton Cage (2-3 size).

requires 2 cts. for postage. We have also a large-sized export Benton cage which is used for sending queens across the ocean to foreign countries.

All of our cages are provisioned with special bee-candy, and the export size is provided, in addition, with a small chunk of sealed honey. The honey and the prepared food make an ideal combination, and we have been successful with it in sending queens to all parts of the world. We deliver anywhere from 50 to 75 per cent of them alive. Unless one understands the making of mailing-cage candy, we recommend that all cages be purchased provisioned and ready for use.

Miller's Queen-catcher and Introducing-cage.

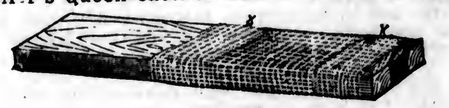


Fig. 118.

This is a very handy little thing to have in the apiary. Any one who is afraid to catch the queen by the wings can slip this cage right over her, and she will crawl up, and then the plug can be inserted. During swarming time it is very nice for catching clipped queens on the ground in the same way. It can be used advantageously, not only for introducing laying queens, but even virgin queens. Being only ¼ inch thick it can be slipped down between the combs or slid in at the entrance.

Name and description.	Price of 1	Price of 10	Price of 100	Wt. of 10.
Benton cage, complete with candy	5	$ 40	$ 3 50	8 oz.
Benton cage, comp. without candy	4	30	2 50	6 oz.
Benton-cage blocks bare	3	20	1 50	5 oz.
Benton-cage covers, printed	1	8	50	2 oz
Miller introducing-cage	10	80	7 00	10 oz.
Long-distance Benton, complete without candy	5	45	4 00	10 oz.
Export Benton, complete with candy and honey	25	2 00	18 00	30 oz.
West's cell-protector	5	40	3 50	4 oz.
West's spiral cage	10	70	6 00	6 oz.
Doolittle cell-protector	3	15	1 20	2 oz.

Postage 1 cent for each ounce in weight and 1 cent extra on each package. Benton cage-covers are printed both sides. Your name and address will be printed in place of ours for 25c per 100, or $1.00 per 1000 extra over prices above.

Wire cloth, 2c per sq. ft.; full rolls, 1¼c; post., 1c ft.
Queen-register cards, 5c for 10; 40c per 100.

BEE-BOOKS.

THE A B C OF BEE CULTURE, 1903 edition; the only encyclopedia on bees; 500 pages. The edition, 5000 copies, issued in October, 1899, was exhausted in the short space of one year. Even before the edition was out of press, 1500 copies had been sold; and before thirty days had passed 1000 more copies were taken. We immediately set to work to print a new edition. While the edition of 1899 was more thoroughly revised than any previous one, that for 1901 received even larger additions of new matter, and the edition for 1903 has been as thoroughly gone over, so that the present volume is clear up to date with all the latest there is in bee-keeping. It now contains 500 double-column pages. It has been most carefully gone over by Dr. C. C. Miller, who has prepared a new set of comments, and by Prof. A. J. Cook, of Pomona College, Cal.

THIS 1903 EDITION MARKS THE 85TH THOUSAND.

It is in many respects superior to any previous one in regard to typographical appearance, quantity of new subject-matter, and general revision of old subjects, for we are now building on the knowledge and experience of these latter days, when such wonderful strides are being made.

FOR THE VETERAN AS WELL AS THE BEGINNER.

While the book is, in the true sense, an A B C of bee-culture, in that it is adapted to the requirements of beginners, it is also a comprehensive X Y Z of the subject; for no veteran, no matter how extensive his experience, can afford to be without a work of this kind, containing as it does a carefully prepared treatment on every late method of practice known to the business. All the bee-literature of past ages, all the current literature of this and every other country, has been carefully scanned; and whatever there is that is new and valuable has been incorporated in this work.

HIGH-CLASS ENGRAVINGS.

The most expensive half-tone engravings, taken direct in the majority of cases from fine clear photos, adorn its pages. Besides 50 full-page illustrations there are something like 500 smaller ones, fully setting forth the exact *modus operandi* of every method.

We are confident that this work will save any one who keeps even a few bees, ten times its cost in a single year.

A CYCLOPEDIA.

For convenience and ready reference the subject-matter has been arranged on the plan of a cyclopedia, and bold headings on every page, together with a very full index in the back part of the book, make it possible for any one to find just the information he desires.

While the book has been enlarged, and hundreds of pages have been rewritten and revised, the price will be the same as before: $1.20 postpaid, or $1.00 by express or freight with other goods, or when sent with our journal, GLEANINGS IN BEE CULTURE, which is a constant appendix to the A B C book, a journal beautifully printed and illustrated, 36 pages, for the very low price of $1.75 for the two. For quantity of up-to-date bee-literature there is nothing else offered at this low price.

FORTY YEARS AMONG THE BEES. Some 17 years ago Dr. C. C. Miller, of Marengo, Ill., wrote an unpretentious little book entitled, "A Year Among the Bees." This was charmingly written, and in a style so simple and easy that it read more like a story than a treatise on bees. The new book, in one sense a revision of the old, because it uses some of the old matter, is, to all intents and purposes, a brand-new work with a title that certainly covers a large expanse of time for one life, and that of a man who is one of the best-posted bee-men in the United States—a practical bee-keeper, one who produces large crops of honey. He has for years read most thoroughly all the literature on bees, both in Europe and America. With all his practical knowledge relating to the business he is a college graduate, a graduate of a medical school, and one who has had a large experience as a journalist. His training is just such as would enable him to write a book on bees; and his last book from his ripest and best experience, is a masterpiece. It is just as much a good story as the old one, and just as interesting. It contains over 300 pages and 100 beautiful half-tone pictures from photos taken by the good doctor himself while he was at his every-day work among the bees. Price $1.00, postpaid, or clubbed with Gleanings in Bee Culture for $1.75.

LANGSTROTH ON THE HONEY-BEE. Revised by Dadant & Son. The original work, by the father of American bee-keeping, was a most valuable one in its time. The revisers have brought it up to the present advanced stage of bee-keeping, and have greatly increased its value as a reliable source of information on all subjects relating to the honey-bee. They are practical men, and no better authority could have been selected for the revision. The work has been accepted as a standard in Europe and America, in fact, it has been translated into the Russian and French languages. We can furnish the French edition at $1.50 postpaid, $1.35 not prepaid. The book contains nearly 600 pages, 16 large plates, and 200 other illustrations. Price $1.25 postpaid. By freight or express, 15 cts. less.

MANUAL OF THE APIARY. By the well-known writer, Prof. A. J. Cook. This work treats of both the scientific and practical part of bees. It covers a wide field in the range of apicultural matters—many of the subjects not being compassed elsewhere in any one work. The author, besides giving his own opinions, cites the opinions of many of our greatest writers on apiculture. It contains 544 pages and 295 illustrations. It was extensively revised in 1902, bringing it clear up to date. Price $1.20 postpaid; 15 less by freight or express.

ADVANCED BEE CULTURE. By W. Z. Hutchinson, Editor of the Bee-keepers' Review. As the title indicates, this book deals chiefly with the methods and management used by those more advanced—those who follow the business as a means of livelihood. Mr. Hutchinson is a terse, clear, able writer—one who has not only a good theoretical knowledge, but a knowledge based on practical experience. He does not, in the limited scope of the work, attempt to cover all the practices known to the business, but only those which in his own judgment are best suited to that class of bee-keepers whom he is addressing. To the busy man, one who desires to get a lot of good, useful information boiled down in a small compass, this work is especially adapted. While it contains only about 100 double-column pages, yet it is well worth the price asked. Price, in paper binding, 50 cents.

QUINBY'S NEW BEE-KEEPING. This was originally written by Moses Quinby; and this, together with Mr. Langstroth's work, first placed American bee-keeping upon a paying basis. Some years ago Mr. Quinby's son-in-law, L. C. Root, revised and thoroughly re-wrote the book, bringing it up within the present time. Mr. Root, like his father-in-law, made bees pay; and both are practical in their writing. Price $1.00; by freight or express, 10 cts. less.

BEES AND HONEY. By T. G. Newman, formerly the editor of the *American Bee Journal*. This is a 16mo in cloth and gilt, about 160 pages, fully illustrated. Its chief value is the part relating to the marketing and use of honey. Price 75 cts. postpaid.

QUEEN-REARING. By G. M. Doolittle. Any thing from the pen of this writer is sure to be reliable. This contains much valuable information on the subject which gives the book its name. It contains 128 pages and 14 illustrations, bound in cloth. Price $1.00; 5 cts. less not mailed.

BEE PEOPLE, THE. A book on bees especially for children, from the pen of Margaret W. Morley. Including its elegant illustrations, it is, in some respects, the prettiest bee-book in existence. It has 177 pages, very coarse print, the reading being ingeniously interwoven with the illustrations showing the parts of a bee. The story of bee-life is told in a most fascinating manner, and is well calculated to get the casual reader, as well as children, interested in this useful insect. The cuts go just enough into detail to explain fully the lesson taught, without confusing the mind with other things. We think the book well worthy a place in every bee-keepers' home. Fittingly designed cover. Price $1.10, postage 15 cts. extra.

BRITISH BEE-KEEPERS' GUIDE-BOOK. By Thos. Wm. Cowan. This has been before the public so long that it needs no description nor commendation. It has passed through 14 editions, and has been printed in French, German, Danish, Swedish, Russian, and Spanish. Mr. Cowan stands in the front rank of bee-keepers, and in some respects at the very head, and his book is the result of his long experience and extensive reading. If the book is particularly valuable in any one respect it is in regard to the treatment of diseases peculiar to bees. Handsome binding, 175 pages. 90 cts, postage 10 cts. extra.

HONEY-MAKERS, THE. By Miss Margaret W. Morley. This is a story of the life of the bee, told in very interesting style—how it lives, gathers honey, and all about it. While clothing the general subject with an air of poetry, it seems to be entirely within the limits of known facts while attempting to deal with them. We believe it will give all thoughtful bee-keepers a greater liking for their business to read it. Probably it has more to do with the curious traditions connected with bees than any other book of the kind. Price $1.15. Postage, 10 cts extra.

LIFE OF THE BEE. By Maurice Maeterlinck. This is a beautiful book of 427 pages. While it has been praised highly by some, it must be admitted that as a bee-book it is not a safe guide; in fact, it does not even pretend to teach one how to open a hive. But in spite of its glaring inaccuracies as to bees, it is a wonderful book, and has the warmest recommendation of the *British Bee Journal*, the *Irish Bee Journal*, and many others. To say the best, it is very interesting, but should be read carefully so as to sift truth from fiction, which latter the author deals in with all the freedom of poetic license. The typography of the book is of the highest order. Cloth-bound. Price $1.30. Postage 10 cts. extra

HONEY-BEE, THE. By Thos. Wm. Cowan. Gives the natural history, anatomy, and physiology of the bee in a neat and concise style. 220 pages, 136 illustrations, cloth. Price 95 cts. Postage 5 cts extra.

MERRYBANKS AND HIS NEIGHBOR. By. A. I. Root. This is the title of a little book of 210 pages and 68 illustrations. It narrates the alternate failure and success of a beginner who ultimately, through much tribulation, becomes a successful bee-man and a power for good in Onionville. Appropriate original cuts, many of them humorous, are interspersed here and there, representing some of the droll experiences which a beginner with bees somtimes passes through. Besides bees, it talks of other rural pursuits, such as gardening, maple sugar making, etc. Price 15c; 3 cts. less when sent with other goods by freight or express.

BOOKS ON RURAL SUBJECTS.

Rural industries are so closely connected with bee-keeping that we do not think it out of place to include here a few rural books of our publication.

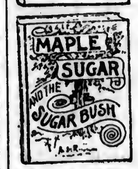
A B C OF POTATO CULTURE. This is T. B. Terry's first and most masterly work. The book has had a large sale, and has been reprinted in foreign languages. It was revised and enlarged in 1901, and the third edition makes 200 pages, half the size of this, fully illustrated, and bound in leatherette cover printed in gold. Price 45c; by mail, 50c. In cloth

THE A B C OF STRAWBERRY CULTURE. 280 pages, fully illustrated; revised and enlarged during 1901. Price 45c; by mail, 5c extra. This is also one of Terry's books, and has received some very high words of praise. Who that keeps bees does not also have a little garden patch? If you would learn to raise in it that most luscious of all fruits, the strawberry, with the best results, you can not be without this little book. Even if you don't grow strawberries you will be the better for reading it. Pages one-half size of this.

WINTER CARE OF HORSES AND CATTLE. This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato book that it reads almost like a sequel to it. If you have only a horse or a cow it will surely pay you to invest in the book. It has 44 pages and 4 cuts. Price 25c; by mail, 30c.

TILE DRAINAGE. By W. I. Chamberlain. This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost agriculturists, who has laid with his own hands over fifteen miles of tile. The price is 35c; by mail, 40c.

TOMATO CULTURE. In three parts. By J. W. Day, D. Cummins, and A. I. Root; a most valuable treatise, embracing field culture, forcing under glass, and raising plants for market. Valuable to any one raising garden stuff of any kind aside from tomatoes. 150 pages; illustrated. Price 35c; mail, 40c.



MAPLE SUGAR AND THE SUGAR-BUSH. By Prof. A. J. Cook. Price 25c; by mail, 30c. This is by the same author as the Manual of the Apiary, and is most valuable to all who are interested in the product of our sugar-maples. No one who makes maple sugar or syrup should be without it; 44 pages, fully illustrated.

A B C OF CARP CULTURE. In paper covers, illustrated. This is a work of 70 pages 7x10, written by Geo. Finley and A. I. Root, and the best authority on the subject of carp culture yet in print. The rearing of carp is a pleasant and profitable amusement. This book will tell you all about it. Price 25 cts.; by mail 5 cts. extra.

WHAT TO DO, AND HOW TO BE HAPPY WHILE DOING IT. The above book, by A. I. Root, is a compilation of papers published in GLEANINGS IN BEE CULTURE, in 1886, '7, and '8. It is intended to solve the problem of finding occupation for those scattered over our land, out of employment. The suggestions are principally about finding employment around your own homes. The book is mainly upon market-gardening, fruit culture, poultry-raising, etc. Price in paper covers, 50 cts; cloth, 75 cts. If ordered by freight or express, deduct 8 and 10 cts. respectively.

Price List of Books.	By mail.	Postage.
A B C of Bee Culture, cloth	$1 20	20
Forty Years Among the Bees, C. C. Miller	1 00	10
Langstroth, Revised by Dadant, cloth	1 20	15
Quinby's New Bee-keeping, cloth	1 00	10
Manual of the Apiary, cloth	1 25	15
Advanced Bee Culture	50	5
Bees and Honey, T. G. Newman, cloth	75	5
Queen-rearing, G. M. Doolittle, cloth	1 00	5
Foul Brood, Wm. R. Howard, paper	25	2
Merrybanks and His Neighbor, paper	15	3
The Bee People, Margaret W. Morley	1 25	15
British Bee-keepers' Guide-book, Cowan	1 00	10
The Honey-makers, Margaret W. Morley	1 25	10
Life of the Bee, Maurice Maeterlinck	1 40	10
The Honey-bee, Cowan	1 00	5
What to Do, and How to be Happy While Doing It, cloth	75	10
The same in paper covers	50	8
A B C of Carp Culture, paper	30	5
A B C of Potato Culture, paper	50	5
A B C of Potato Culture, cloth	75	5
A B C of Strawberry Culture, paper	50	5
A B C of Strawberry Culture, Cloth	75	5
Winter Care of Horses and Cattle, paper	30	5
Maple Sugar and the Sugar-bush, paper	30	5
Tile Drainage, by W. I. Chamberlain	40	5
Tomato Culture	40	5

Discount.—On three or more rural books, one title or assorted, 10 per cent discount; 10 or more, 15 per cent.

How to Italianize an Apiary.

There are several ways this can be done: First, by buying tested queens for every one of the colonies containing black or hybrid queens. The old queens should, of course, be removed, and the hive left queenless for a couple of days before the new mothers are introduced. This method, although the surest, is rather expensive.

A cheaper way, and the one we would generally recommend, is to buy untested Italian queens after the honey season, or when the price is the lowest—say during August, September, and October; see table. Nine-tenths of the untested we send out will prove to be purely mated; and then, if the beginner loses his queen in introducing, the loss of an untested is only half that of a tested.

Still another way (and it implies a knowledge of queen-rearing) is to purchase three or four select tested queens; introduce them to some good stocks, and then from these raise virgin queens. In order that these queens may stand a fair chance of being fertilized by pure Italian drones, their colonies should be given drone comb, and as many Italian drones should be reared as possible. In the mean time, perforated zinc in the shape of entrance-guards, or, perhaps, better, Alley drone-traps, illustrated on page 11, should be attached to the entrances of all colonies having impure drones.

How to Make a Start in Bees.

We advise you to buy black or brown bees in your own vicinity. Bees may be purchased in box hives, anywhere from two to three dollars per colony. They should then be transferred, as per directions given below.

How to Transfer from Box to Dovetailed Hives.

The old-fashioned way was, to pry off the side of the box hive, cut out the combs, and fit them, after a fashion, into the brood-frames. But this takes a great deal of time, and at best it is a sticky, mussy job, to say nothing of the mashed-up bees and stings, and finally the result is a lot of patched-up, crooked combs. The combs in box hives are usually so crooked, so old, and contain so many drone-cells, that it will be money in pocket to purchase brood foundations, fasten it into frames on wires ready to receive the transferred colony. See WIRING, and FASTENING FOUNDATION, elsewhere.

We will assume that your hive or hives, having been received in the flat, are put together and painted, and contain frames of wired foundation ready for the bees. Light your smoker and put on your bee-veil. Move the old hive back four or five feet, and put the new hive in its place. Prepare a small box about 8 inches deep and one side open, that will just cover (not slip over) the bottom of the box hive. Turn it upside down; set the hiving-box over it, and then drum on the sides of the hive with a couple of sticks until about two-thirds of the bees pass up into the box. Gently lift off the box containing the bees, and dump it in front of the entrance of the new hive. Make sure that the queen is among them, by watching for her as she passes with the rest into the entrance. If you do not discover her, look inside the hive. If you still fail to find her, drum out bees from the old hive again until you do get her, for, to make the plan a success, she must be in the *new* hive.

Return to the box hive and turn it right side up and set it down a couple of feet back of the new one, with its entrance turned at right angles. You now have in the hive about one-third of the original colony, the combs, and all the brood. Allow the old hive to stand for at least 21 days, at the end of which time the brood will be hatched out, with the exception of a little drone brood which will be of no value. Turn the hive upside down, and drum the bees out again into the hiving-box, after which dump it in front of the entrance of the new hive, as before. Next put an entrance-guard of perforated zinc (see Drones) over the entrance of the new hive. Smoke the bees of the hive and then those in the hiving-box, after which dump it in front of the entrance of the new hive, as before. The smoking is to prevent the fighting on the part of the bees at the second drive, and the entrance-guard is to catch the queen or queens that have been raised in the meantime in the old hive. These one or two, if virgins, should be caught on the perforated metal and given to some queenless stocks. If the old queen in the new hive is a valuable one she should be caged at the time of making the second drive. If neither queen (the one in the old hive or the one in the new one) is valuable the perforated zinc need not be used.

The job of transferring is now completed, and all you have on hand is an old box hive containing a lot of old crooked combs, with perhaps a little honey and drone comb in it. The honey can be extracted, or used as chunk honey on the table, if fit for use. The rest can be melted up into wax, and the hive itself will make first-class kindling-wood, because it is smeared over on the inside with propolis and bits of wax.

Means for Discouraging Swarming.

Much can be done by having the hives properly shaded with good, deep, wide entrances, such as we provide in the bottom boards that we make. The hives should be so placed that they will be shaded from 2 o'clock till 4 if possible. Some use shade-boards set on top of the hive. Such a board usually consists of a framework of thin boards, wide enough to project from 6 to 8 inches on each side, and from 12 to 18 inches over the front and rear. A stone or weight of some kind holds it on the hive, and keeps the wind from blowing it off. Such an arrangement gives the full benefit of the sun's rays during the early morning and the late afternoon hours, and yet shuts them off during the heat of the day. Others object to shade-boards, and prefer an orchard of fruit-trees or small shade-trees, putting one, two, or three hives in a group on the north side of each tree. If the trees are not too large they afford a shade more convenient, and certainly accomplish as much as the shade-boards just described.

How to Control Swarming.

It is the usual practice of comb-honey producers to clip all queens' wings; for, in spite of any method used for preventing swarms, a swarm will occasionally come out; and to forestall actual losses of bees, the queens' wings should be clipped so the bees will return. In all such cases the swarm should be taken care of, for otherwise the bees will loaf, possibly swarming every day until they kill the old queen and then abscond with a virgin. To handle swarms by the clipped-wing plan, proceed as follows: While the bees are in the air, hunt up the queen (probably in the grass) and cage her. Remove the hive from the old stand; put another one with empty frames or empty combs in its stead. Put the super with its bees on the new hive, and the caged queen in front of the entrance. Very soon the bees will return to find the queen, and as soon as they are going into the hive nicely, release the queen, and the bees will go to work with a vim in the super they had on the old hive, but which is now on the new hive on the old stand. In the meantime the old hive with its few bees and brood should be moved to one side or entirely to a new location.

Control of Swarming by Brushing or Shaking.

A plan that is now being used with universal success and satisfaction is one that has been called "forced swarming." When there are indications that a colony is about to cast a swarm, and when the bees are storing honey in the supers, the old hive should be set to one side, and another with frames of foundation starters, or, what is better, frames with full sheets of foundation or empty combs to set on the old stand. The frames to the old hive are now shaken in front of the new entrance, one at a time. If there is a great deal of new honey in the combs it may be advisable to brush them off with a Coggshall brush. When nearly all the bees have been shaken off, set the combs back in the old hive, and then place it facing the same way alongside of the new one. After the brood is hatched in the old hive, shake the combs clean of all the bees in front of the new one again and remove the old hive entirely. This will give the shaken colony all the bees. If one is not particular about the queens, shake either at the first or second drive, without paying any attention to the queen. If the queen is valuable, cage her and then shake, after which release her. But at the second drive the young queen or queens from the old hive should be taken care of before shaking, as they might destroy their old mother.

The effect of this shaking and brushing is to cause the bees to run into the entrance and to bring about artificially the conditions induced by a swarm that has just returned from the air; and reports in scores of instances show that these forced swarms (shaken or brushed, as some call them) will remain and go to work about the same as a natural swarm. While perhaps the general scheme of a forced swarm offers no great advantage in the saving of labor over a natural swarm when the queen's wings are clipped, yet it puts the operation at a time when the apiarist can perform it at his convenience, and not at a time when he may be away from home or worse still away from one of his outyards, and no one to look after the bees. If a colony be shaken early enough, it will not swarm any more than would a natural swarm that has been hived. What is more, the shaken swarm can have all the bees, and the increase can be kept down—an important consideration with many.

Prevention of Swarming for Extracted Honey.

Give the queen unlimited room for egg-laying, and, if necessary, put on another hive-body. From the lower story draw out a couple of combs and put them above, filling out the space in both stories with empty combs or frames of foundation. Extract from both stories as often as need be, or put on a third story of empty comb or foundation. The main thing seems to be to give the queen and bees an abundance of room. You may ask why you could not do this for comb honey. Before the bees go into the sections they will fill the combs next to the brood with honey; and if the season should be short you would get no honey in the sections. But in extracting you can take from the bees just as much as, in your judgment, the bees can spare. The subject is treated far more fully in our A B C of Bee Culture. Price, in cloth, $1.20—see BEE-BOOKS.

How to Produce Comb Honey with Dov'd Hives.

The first important requisite is early brood-rearing, so that there may be a *large force of bees* at the right age for gathering honey as soon as the harvest opens. The hive should be crammed full of brood a month or six weeks before the harvest, and to secure this it may be necessary to practice stimulative feeding as described elsewhere, even though there is honey in the hive. In addition it would be well to put on winter cases, if the hives are single-walled; for early in the spring, especially in the North, the brood-nest needs protection. As soon as the regular honey season is fairly begun, and the bees whiten the upper edges of the combs, and before they begin to be cramped for room, place on a super filled with sections; if the sections contain full sheets of foundation it will be better.

If the bees refuse to go up into the boxes, remove one or two sections from the center and put in place of them one or two containing drawn-out comb partly filled with honey. These may be gotten from some other colony already at work or from a store held over from the preceding season. A few of such sections should always be saved over. If the bees still refuse to go to work, either the working force is too small or there is little or no honey in the fields.

When they have filled the super about half full, raise it up and put another empty one under it; but do not do so if there is a prospect of the honey being cut off within a week or ten days, otherwise you will be liable to have a lot of unfinished sections on your hands, to be sold at a reduced price.

As the season slacks up there should be only one super on the hive, and in order to get all the sections completed it will probably be necessary to alternate the section-holders; i. e., change the center ones to the outside, and the outside to the center, because the bees usually work better in the center than at the outside. By alternating, the bees will probably fill and complete all the sections at a time. This is the peculiar feature of the section-holder arrangement.

As soon as the combs are capped over, they should be taken from the hive. To get the bees out of the sections, smoke down between them, take the super off and shake it vigorously. Smoke and shake again till all or nearly all the bees are out. A better way is to use the bee-escape shown elsewhere. This is placed on the night before, and there will generally be few if any bees there the next morning. For further particulars on how to produce comb honey see the A B C of Bee Culture, 500 pages, written especially for beginners. Price, in cloth, $1.20. See BEE-BOOKS.

How to Produce Extracted Honey.

There should be a large force of bees secured by early brood rearing, as in the case with comb honey. As soon as honey begins to come in, and bees commence to be a little crowded, place a hive-body or extracting-super, containing a full set of drawn-out combs, on top, with a perforated-zinc honey-board between them. If you haven't the combs, give frames containing full sheets of foundation. If nectar is coming in slowly, put on only half as many combs, with a division-board up close to it; or if you are using shallow extracting-supers, give only one super at a time. As the combs begin to be filled with honey, if the honey-flow continues, lift the super containing them and put on another one with empty combs, between it and the brood-nest. The combs should be pretty well sealed before extracting.

If you haven't time to extract as soon as the combs are capped over, leave them in the hive, giving the bees empty combs below as fast as needed. At the end of the season, or when you have time, extract. The longer the honey remains on the hives up to two or three months, the richer it will become.

To get the bees off the combs use the Coggshall bee-brush, as it is far better for the purpose than any other brush we know of; but it is better to dispense with the brushing of combs altogether when practicable, and use instead the bee-escape. See BEE-ESCAPE.

To uncap, use a Bingham honey-knife, occasionally dipping it in hot water. Save the honey that drains from the cappings, because this is the very best. For this purpose we know of nothing better than the new Dadant uncapping-can shown elsewhere. When ready to extract, the extractor should be screwed down to a bench just high enough so that the honey-gate will come over a receptacle or a pipe leading to one where the honey may be further evaporated. To get at the extractor conveniently, it may be necessary to stand on a box so that the crank can be operated easily, as well as to facilitate the removal of the combs from the extractor. If your combs are unwired, you should by all means have a reversible extractor. With this you can extract from one side partly, and then reverse the combs; throw out all the honey on that side, and then return to the first side, and finish. This will prevent breaking down the combs. We advise all those who do very much extracting, not only to have all their combs wired, but to have a *reversible* extractor. It doesn't pay to waste time with the non-reversing machines and unwired combs when much honey is to be thrown out. Fuller particulars on this subject are given in our A B C of Bee Culture. Price in cloth, 500 pages, $1.20. See BEE-BOOKS.

Wintering.

A good deal depends upon locality as to when preparation should be made.

If, at the close of the summer, your bees are short of stores, and have no prospects of a fall flow of nectar, the earlier they are fed up the better. Colonies *may* be fed late in the fall, or just before actual cold weather comes on, but it is not advisable. If you have been careless and have put it off till late, use the Miller feeder, or Doolittle, described under FEEDERS.

WINTERING IN SINGLE-WALLED HIVES.

Single-walled hives, as, for instance, the Dovetailed, are cheaper and handier in many ways, and hence the majority to whom these hints are addressed are obliged to winter in them. South of parallel 35, or even 40 in some localities, these hives will winter bees outdoors very well with but little protection. They should be sheltered, of course, from the prevailing winds, and the two outside frames (most colonies will spare them) should be removed and a chaff-packed division-board substituted. A half-story, or super filled with chaff, leaves, sawdust, or planer shavings, should then be put on top. In the extreme Southern or Gulf States, no additional protection is needed, and the only thing to guard against is actual starvation.

North of parallel 40, single-wired hives should either be put in our Dovetailed outside winter-case, as shown on page 11, or carried into a cellar or other repository proof against freezing. Colonies in such hives, if strong enough, may be wintered *outdoors* without the outside cases, but

usually it is at a considerable loss of vitality. In fact, a whole apiary, if the winter should be mild, will live through; but sad experience has shown repeatedly that it is best to prepare for a cold winter. Nothing is so discouraging to beginners, and so disastrous to bee-keeping, as to lose, during the winter, half or two-thirds of the colonies, with the rest weak, and hardly fit to be called colonies. Put them in winter cases, or lift the frames out of the single-walled hives, and put them in double-walled or chaff hives; or, what will be cheaper and more convenient to most bee-keepers, carry them into the cellar.

How to Winter in the Cellar.

A good dry cellar into which frost never penetrates is essential; and if possible that part which is used for vegetables should be partitioned off from that occupied by the bees. The windows, while they should permit of easy opening to let in fresh air, should be so screened as to shut out all the rays of light, for the cellar should be kept absolutely dark, to keep the bees from flying out and dying on the floor.

As to size, 10x10, by 7 feet high, or equivalent capacity, might accommodate 100 colonies; but 50 will come through in better condition. If a larger number is put in, there should be some means of ventilation by which the air can be freshened, else it will become foul, and make the bees uneasy. In ordinary practice it may not be practicable to ventilate in any way except by opening the cellar windows or doors at night, during such times as when the weather is not too cold outside. If, however, it continues to be cold pretty much all winter, it would be advisable to have one of the windows partly open at night even if it does lower the temperature. When the winters are very cold —cold enough so the temperature in the cellar will keep down as low as 45, and continue at that point throughout the winter, less ventilation is required —that is, less opening of the cellar windows or doors than when it is warm enough to cause the temperature to rise to 55 or 60. With such a temperature the windows should be opened every night and closed before daylight; but under no circumstances leave the windows open during the day, for by so doing light is admitted. There is no objection to keeping them open providing the room can be kept absolutely dark. As a rule, 10 or 15 colonies will winter far better in an ordinary cellar than three or four times that number. A cellar should ordinarily be large enough in cubic capacity to actually accommodate three or five times as many colonies as it should really have, to get the best result. Plenty of fresh air is essential, and a room large in proportion to the number of bees accommodated will give better air, of course, than a smaller one.

It is essential to keep the temperature as near 45 or 50 Fahr., as possible. Better have a temperature too low than too high.

When to Put Bees in the Cellar.

This will vary, of course, according to the locality. When settled cold weather comes on, or is at hand, according to the calendar, the bees should be put in. If the fall should continue to be warm, keep the bees out till it turns cold, irrespective of calendar dates; and when it turn really cold, put them in of course. If the hives have the old-fashioned narrow entrance, ⅜ by the width of the hive, they should be lifted partly off the bottom-board, and held up by means of blocks at least an inch high, or, better, two inches. While the bees are in the cellar it is necessary to have plenty of bottom ventilation. Some go so far as to pry the bottom-boards off entirely; then pile the hives in in such a way that one hive will straddle two others below. But with our new hives having bottom-boards, with deep entrances will require no change. If one is fortunate enough to have the bottom-boards recommended and described in this catalog, known as the new Danzenbaker, he should pull out the floor-boards, giving a space of 2 inches under the frames. The next spring, when the bees are put out, put the floor-boards back.

As to the time to set out, we usually advise a day when it is warm and the soft maples are coming in bloom. In Northern Ohio, that is along about the last of April or first of May. If the bees get very uneasy, and can not be kept easy without flying out on the cellar bottom, set them out earlier than you would ordinarily do.

Wintering in Double-walled or Chaff Hives.

Outdoor wintering is simpler than the indoor. It requires less skill, and the beginner will more likely have success. Our chaff hives have everywhere given uniformly good results; and, no matter whether the winter be mild or bitter cold, they "get there just the same." The method of procedure is simply to contract the brood-nest to as many frames as the bees will cover comfortably, and insert a division-board. Lay a Hill device over the center of the frames; spread the burlap sheet over (any porous material will do), and over it the cushion, or, better, the tray mentioned under CHAFF HIVES.

Caution.

In conclusion, don't "put off" preparations for winter. Commence *early* in the fall to feed; and, if outdoors, the sooner they are packed the better. For further particulars on this subject we refer you to the A B C of Bee Culture, a cyclopedia of over 500 pages.

Foul Brood—Its Treatment and Cure.

SYMPTOMS.

Some of the brood fails to hatch. Cappings here and there are sunken and perforated at the center. On opening one of these cells there will be found a dead larva lying on one side of the cell somewhat shrunken, and of a brownish color, carying all the way from a light pale brown to a dark brown. In the more advanced stages the brown is of the color of a coffee-berry after being roasted. In the incipient stages the brown is of the color of the coffee we drink, when greatly diluted with milk. But so far all these symptoms may be present as the result of overheated, chilled, or starved brood. But to determine whether it is the real foul brood, run a toothpick into the dead larva and then slowly draw it out. If the maturated mess adheres to the end of the pick, about like spittle, and finally the fine thread breaks when the pick is drawn back, it is probably a case of foul brood. With all other forms of dead brood, with perhaps one exception, this ropiness does not appear; but with foul brood it invariably appears. Now, there is another symptom; and that is the odor, while not exactly foul, resembles greatly that from a cabinet-maker's glue-pot; and when the disease is pretty well advanced in the hive, the odor will make itself manifest upon lifting the cover or quilt, even before exposing the brood. If other colonies are affected in a similar way, and the disease appears to spread, it is unquestionably a case of foul brood.

TREATMENT.

Prepare a clean hive containing only frames of foundation. Toward night shake all the bees from the diseased or suspected colony on to frames of foundation, and place the new hive on the stand of the old one. If possible, the new hive should resemble exactly the old one; otherwise the bees will be confused, and carry the germs of disease to other colonies. Compel the bees to use up the honey in their honey sacs in drawing out foundation. Don't feed for a day or so.

The diseased honey in the honey-sacs will be converted into wax, and the new product will be entirely harmless. If you are treating only one colony it would be better to burn the combs. If you are to treat a dozen or more it may be advisable to melt the combs up. In that case do all the work in a closed room, with a German wax-extractor; and after the machine has been used for that purpose, clean it out as far as possible and let it steam all of half a day with nothing but water in the lower compartment

As to the hives, some do not think it necessary to disinfect; but we believe it is wise to err on the safe side. As it is not practicable to immerse the whole hive in boiling water, we would smear the inside of it with coal oil, touch a match to it, and let it burn until it is blackened or charred; then clap the cover on, when the fire will be put out. The cover itself should be charred in like manner, but before the hive is treated.

If foul brood is inclined to break out in your yard, or if the disease is present in the apiaries of your neighbors, we would advise shaking the bees on to foundation at the beginning of the honey season, as recommended under Forced Swarming, on page 32. Such a procedure will keep the disease out of your own yard and at the same time hold swarming in check.

RUBBER STAMPS.

Fig. 105.

Many make use of rubber stamps for marking their shipping-cases, sections, letters, etc. Where you have a great many to mark they are cheaper and much more quickly applied than labels. If you do not use printed stationery it is much better to have a rubber stamp for your name and address; then there is no chance of our reading it wrong, nor of your leaving off the name and address, as is very often done. We can furnish cheap name-stamps at 15 cts. for a single line; 25 cts. for two lines; 5 cts. extra for each additional line. Lines may be anything up to 3 inches long. A small self-inking pad to go with it, 20 cts. Other stamps in proportion. Send for circular of rubber stamps. We make our own stamps, and can supply you promptly at best prices with anything in the line of stamps, stencils, etc.

HONEY LABELS.

If only a good quality of honey were put on the market, and tastily labeled with the grade of honey, and the name and address of the producer, it would go far toward checking the impression that honey is adulterated. Some producers of comb honey mark each section with label or rubber stamp, giving name and address of producer. This creates a demand for their products, if it is A No. 1. A neat sample-book of over 50 different styles of labels, with prices, mailed free

DEXTRINE.

For gumming honey-labels and pasting labels on wood, tin, etc.; will stick and dry instantly. This is the substance used on postage stamps, and by express companies for putting on their labels, etc. Directions for use on each package.

Prices, 3 oz., 5c.; ½ lb., 10c; 1 lb., 15c.; 2 lb., 25c.

If wanted by mail, send 1c per oz. for postage.
Price of brush, 10c.; by mail, 12c.

PARAFFINE WAX.

Price 20c per lb.; 10-lb. cakes, 16c per lb.

For coating the inside of honey-packages such as kegs and barrels, this is fully as good as or better than beeswax, and much cheaper.

BEE-GLOVES.

The best gloves we know of for handling bees are made of cotton, soaked in linseed oil, and dried in the sun. We have such gloves in three sizes—large, medium, and small—at 50c a pair. By mail, 8c extra for postage. We can furnish rubber gloves as follows:

Ladies' sizes, Nos. 6, 7, 8 and 9, $1.35; postage, 5c.
Gents' sizes, Nos. 10, 11, and 12, $1.45; postage, 5c.
Extra long driving, Nos. 13 and 14, $1.70; postage, 10c.

Mark size of hand on sheet of paper when ordering.

If you order by number, remember that in rubber you need two sizes larger than you wear in kid; i. e., if you wear No. 6 in kid you will need No. 8 rubber.

OUR DAISY WHEELBARROW.

Price $3.50.

This is about the handiest and most popular implement for use about the home or shop which we have ever sold. It will carry 500 lbs. safely, and it can be packed so closely together for shipment that you can take the whole thing under your arm and walk off easily. The wheel has flat spokes set zigzag. The legs are wood and steel, so they will neither break nor bend, even if you bump them on the sidewalk. The springs are oil-tempered with adjustable bearings, so the wheel will always run freely.

CEMENT-COATED WIRE NAILS.

We are now using in almost all our work what are known as cement-coated nails. They are the ordinary wire nails with a thin coat of brown substance. The friction of the nail on the wood in driving softens this coating and makes it adhere to the wood while also adhering to the nail. This makes the nail hold better than anything heretofore known. If you have ever tried to draw a rusty nail you know something how these nails hold. If you wish to investigate them we will mail a sample package of various sizes for 5 cents to pay postage.

Price List of Standard (D) Wire Nails.

All cement coated.

Style.	Length.	Wire Gauge.	No. Nails in 1 lb.	Price of— 1	10	Keg.
2*d* fine.	1 in.	No. 17	1440	8	60	$5 00
3*d* "	1⅛ "	" 16	1000	7	60	4 65
4*d* box.	1½ "	" 15½	550	7	60	4 50
5*d* "	1¾ "	" 14½	366	7	60	4 50
6*d* "	2 "	" 13	250	7	55	4 35
7*d* "	2¼ "	" 13	236	7	55	4 35
8*d* "	2½ "	" 12	157	7	55	4 25
9*d* "	2¾ "	" 12	130	7	55	4 25
10*d* "	3 "	" 11	107	6	52	4 15
4*d* casing.	1½ "	" 15	550	7	60	4 65
6*d* "	2 "	" 13	250	7	55	4 45
8*d* "	2½ "	" 12	157	7	55	4 35
3*d* common.	1¼ "	" 15	615	7	55	4 45
4*d* "	1½ "	" 13	322	7	55	4 30
5*d* "	1¾ "	" 12½	254	7	55	4 30
6*d* "	2 "	" 12	200	6	52	4 20
7*d* "	2¼ "	" 11½	154	6	52	4 20
8–9*d* "	2½ "	" 10½	106	6	51	4 10
10*d* "	3 "	" 9½	74	6	50	4 00

Price List of Fine Flat-head Wire Nails.

Cement-coated, except first three.

L'gth.	Wire Gauge.	No. in 1 lb.	Wt. of 5c pkg.	Price of 1 lb.	10 lbs.	100 lbs.
¼ in.	No. 21	17,500	1 oz.	.35	$3.00	$27.50
⁵⁄₁₆ "	" 20	12,500	2 oz.	.30	2.50	22.50
⅜ "	" 20	10,000	2 oz.	.25	2.00	19.00
½ "	" 20	7,500	2 oz.	.20	1.80	17.00
⅝ "	" 19	4,200	2 oz.	.18	1.60	14.00
¾ "	" 18	2,700	4 oz.	.16	1 40	12.00
⅞ "	" 18	2,350	4 oz.	.14	1.20	10.00
1 "	" 18	2,000	4 oz.	.12	1.10	9.50
1¼ "	" 17	1,200	4 oz.	.10	1.00	9.50

Price List of Tinned Tacks.

Name and size.	Wt. of 5-ct. pkg.	No. in— 5-ct. pkg.	1 lb.	Price of 12 pk.	1 lb.
2 oz. tinned Swedes, ¼ inch	oz.	250	4000	30	35
3 " " " ⅜ "	1½ "	250	2650	35	25
6 " " " ½ "	"	250	1333	45	20
8 " " " ⅝ "	4 "	250	1000	50	15

The 6 and 8 oz. are used for carpet-tacks or other coarse work.

Double-pointed Tacks.

Fig. 110.

No. 11 double-pointed tacks, tinned, same size as cut. These are useful for a variety of purposes.

Two oz., 5c; 1 lb., 20c; 10 lbs., $1.80.

End-space Staples.

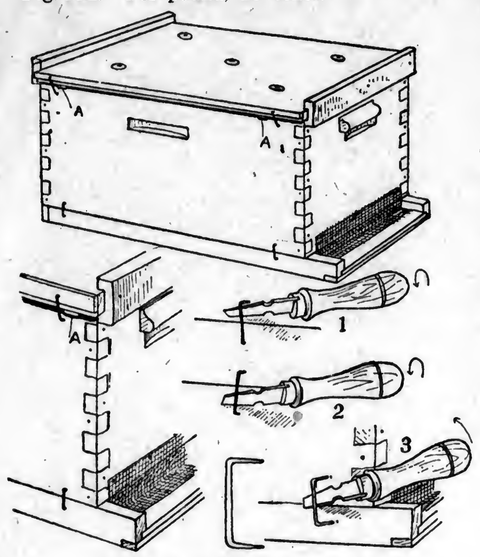
For use in brood-frames as shown in Fig. 24. Three oz., 5 cts.; 1 lb., 15 cts.; 5 lbs., 70 cts.

Any of the above tacks or nails will be sent by mail at a cost of 18c per lb. for postage. If you want only a single ounce you must send 2c to pay postage. Postage on 2-oz. package is 3c; on 3-oz. package, 4c. The staple sizes of nails are liable to an advance without notice.

Fig. 111.

Crate-staples.

These are 1½ inches wide, with points ¾ inch long, and may be used to fasten the bottoms to hives in moving, or to mend a split in a box. Per pound, 15 cents.



VAN DEUSEN HIVE-CLAMP.

FIG. 31.

Price 35c for 10 pair, including two screws with each clamp; postage, 3c per pair extra.

Without screws, 30c for 10 pairs.

These are very convenient for fastening loose bottoms when you want to move hives. They may also be hold the cover on, or two bodies together. They are of malleable iron, japanned..

Quinby Corner-clamps.

These are used on hives which are not otherwise fastened together at the corners. There are 12 pieces of casting in each set of corners. Price $1.20 per 10 set; postage, 13 cts. per set..

HILL'S DEVICE.

Fig. 30.

Price, 60c for 10; by mail, 5c each extra.

This is placed over the frames and under the cushion to form a chamber for the bees to cluster in, and to allow them to pass freely from one comb to another over the top of the frames. It is quite necessary in cold climates to use something for this purpose, and this device fills the bill the best of anything.

CARLIN'S FOUNDATION-CUTTER.

Price, with tin wheel, 15 cents; by mail, 18 cents.

Price, with steel wheel, 25 cents; by mail, 28 cents.

These are very convenient for cutting a great number of small pieces, one sheet at a time. The wheel should be kept hot by occasionally immersing in hot water. We prefer, however, for larger work, to cut a board the size wanted, and lay it on a pile of half a dozen sheets or more, then, with a *very sharp,* round-pointed butcher-knife, cut with repeated strokes through the whole at once, clear round the board. If the wax is neither too cold nor too hot, and you keep your tool lubricated, you can, with practice, do it rapidly and nicely.

Round-pointed butcher-knife, 15c; by mail, 20c.

COMB-BUCKET.

FIG. 37.

Price for Lang. frame, $1.25. Holds six loose or five Hoffman frames, secure from dust or robbers, and catches all the drip. It will be found to be especially valuable when extracting. In it the combs, secure from robbers, may be carried from the hive to the extracting-house easily.

ENAMELED CLOTH.

This is preferred by many to anything else, for covering the frames, before the chaff cushions are put over the bees. I have seldom known the bees to bite through it, and the surface is so smooth and glossy they put very little propolis on it.

Price per yard, 45 inches wide, 25c; 12 yards, $2.50. If ordered by mail, 15c per yard extra

BURLAP.

This is used to make chaff cushions, and also for quilts to lay over the frames and Hill's device in winter.

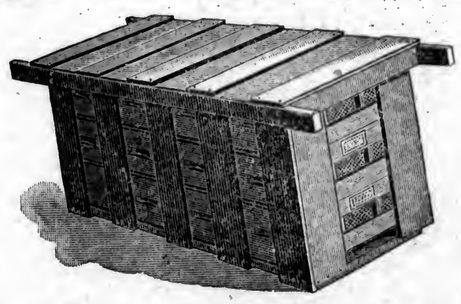
Price per yard, 40 inches wide, 8c; 10 yards, 75c. Weight, 8½ oz. to the yard.

WHERE TO SHIP HONEY; IRRESPONSIBLE COMMISSION HOUSES.

Better by all means sell around home. If your own market is glutted, and you must find a new one, never ship to an unknown firm, even if they do talk extravagantly about their bank references, their large prices, and liberal advances. Some bee-keepers have found out to their sorrow during past seasons that, if they secure any returns at all from such concerns, the prices will be about a half or even a quarter of what they would have been if the honey had been shipped to reliable houses. If they had taken a bee-journal, as GLEANINGS IN BEE CULTURE, or *American Bee Journal,* they might have saved this loss. If you do not know the firms, write to us, and we will give you the best information at our disposal.

HOW TO SHIP COMB HONEY..

Never think of shipping your cases of nice comb honey in small lots unprotected, for they are almost sure to go through in a broken or damaged condition. The cases of comb honey should always be crated something as shown below; and



in the bottom of the crate, under the honey, should be a quantity of loose straw, the purpose of which is to act as a cushion. Honey put up in this way can go by freight, and is rarely if ever broken in transit.

RUBBER STAMPS.

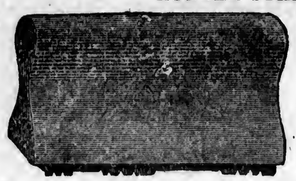


Fig. 105.

Many make use of rubber stamps for marking their shipping-cases, sections, letters, etc. Where you have a great many to mark they are cheaper and much more quickly applied than labels. If you do not use printed stationery it is much better to have a rubber stamp for your name and address; then there is no chance of our reading it wrong, nor of your leaving off the name and address, as is very often done. We can furnish cheap name-stamps at 15 cts. for a single line; 25 cts. for two lines; 5 cts. extra for each additional line. Lines may be anything up to 3 inches long. A small self-inking pad to go with it, 20 cts. Other stamps in proportion. Send for circular of rubber stamps. We make our own stamps, and can supply you promptly at best prices with anything in the line of stamps, stencils, etc.

HONEY LABELS.

If only a good quality of honey were put on the market, and tastily labeled with the grade of honey, and the name and address of the producer, it would go far toward checking the impression that honey is adulterated. Some producers of comb honey mark each section with label or rubber stamp, giving name and address of producer. This creates a demand for their products, if it is A No. 1. A neat sample-book of over 50 different styles of labels, with prices, mailed free

DEXTRINE

For gumming honey-labels and pasting labels on wood, tin, etc.; will stick and dry instantly. This is the substance used on postage stamps, and by express companies for putting on their labels, etc. Directions for use on each package.

Prices, 3 oz., 5c.; ½ lb., 10c; 1 lb., 15c.; 2 lb., 25c.

If wanted by mail, send 1c per oz. for postage.

Price of brush, 10c.; by mail, 12c.

PARAFFINE WAX.

Price 20c per lb..; 10-lb. cakes, 16c per lb.

For coating the inside of honey-packages such as kegs and barrels, this is fully as good as or better than beeswax, and much cheaper.

BEE-GLOVES.

The best gloves we know of for handling bees are made of cotton, soaked in linseed oil, and dried in the sun. We have such gloves in three sizes—large, medium, and small—at 50c a pair. By mail, 8c extra for postage. We can furnish rubber gloves as follows:

Ladies' sizes, Nos. 6, 7, 8 and 9, $1.35; postage, 5c.

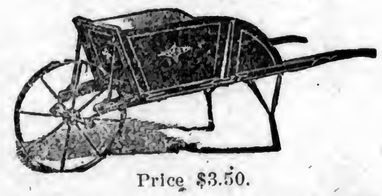
Gents' sizes, Nos. 10, 11, and 12, $1.45; postage, 5c.

Extra long driving, Nos. 13 and 14, $1.70; postage, 10c.

Mark size of hand on sheet of paper when ordering.

If you order by number, remember that in rubber you need two sizes larger than you wear in kid; i. e. if you wear No. 6 in kid you will need No. 8 rubber.

OUR DAISY WHEELBARROW.



Price, $3.50.

This is about the handiest and most popular implement for use about the home or shop which we have ever sold. It will carry 500 lbs. safely, and it can be packed so closely together for shipment that you can take the whole thing under your arm and walk off easily. The wheel has flat spokes set zigzag. The legs are wood and steel, so they will neither break nor bend, even if you bump them on the sidewalk. The springs are oil-tempered with adjustable bearings, so the wheel will always run freely.

ROOTVILLE LAWN-MOWER.

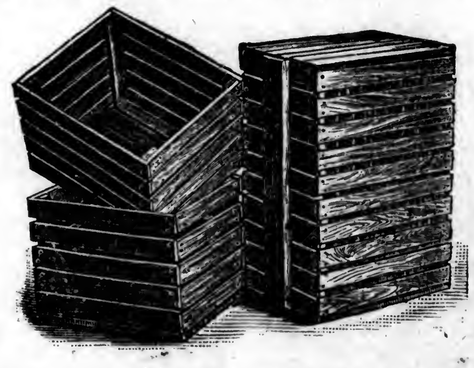
The mower we offer this year combines the latest improved methods of construction, and at a very low price. The wheels are eight inches high, and it has a three-knife open reel. The pinion-ratchet is very simple and durable, and a sure catch every time you start ahead. The setting device for raising and lowering the roller to cut short or long, is very simple, and easily adjusted. It is light and easy running, and an A No. 1 machine

PRICES ARE AS FOLLOWS:

12-inch cut....$2.60	14-inch cut....$2.70
16-inch cut.... 2.80	18-inch cut.... 3.00

BUSHEL BOXES.

The cut below shows our popular all-slatted bushel box. We have two other styles; one has slatted bottom and sides with tight ends in three



pieces called the slatted bushel box. The other has tight ends, bottoms, and sides, and is bound with galvanized iron, and is called the galvanized bound box. These boxes were devised by T. B. Terry for handling potatoes, for which purpose nothing could be handier. The potatoes are picked up into the boxes in the field and left in them till sold. Other crops, such as cucumbers, tomatoes, and apples are being handled in these same boxes. They are of such a size that two go crosswise in an ordinary wagon-box. Outside measure is 14½ x16⅞x12½ deep, and they hold a bushel of potatoes level full so they can be piled one upon another. The above cut shows two all-slatted boxes nailed up, and a bundle of 14 alongside; 12 of the 14 are in the flat, packed inside the other two, and nails of the proper kinds are included. The slatted and galvanized bound boxes are put up in the same way, except there are only 12 in a package instead of 14. Each package weighs about 85 to 90 lbs.

PRICE LIST.

All-slatted bushel box, per crate of 14.....	$1.90
Slatted bushel box, per crate of 12.....	1.65
Galvanized-bound bushel box, crate of 12...	2.25

In lots of ten crates, 5 per cent. discount.

Rare Book Room
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1903

Gleanings in Bee Culture.

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Do You Need Gleanings?

Certainly. If you do not read GLEANINGS IN BEE CULTURE and know the condition of the honey market as reported in the Honey Column, you are likely to sell a good crop of honey at from 10 to 25 per cent below the market price, as we know of some who did last season, simply because they did not know that the market was better than it had been in former years. For these reports alone you ought to have GLEANINGS. The honey market is correctly and definitely quoted from the principal cities of the United States and corrected every issue.

Its Writers.

GLEANINGS IN BEE CULTURE employs the very best writers to be had; men who have made money keeping bees, and are therefore competent to advise.

Sample Copies Free. Read This.

We are glad to send sample copies free at any time. Better still send us 25 cents for a six months' trial. If you are willing to do a little work for us in the way of distributing sample copies and furnish us names of bee-keepers, we will be glad to arrange with you for this work in exchange for your own subscription to GLEANINGS; or if you are prepared to devote considerable time to it, we will give you a liberal cash commission.

Some of the Departments.

Stray Straws:

By Dr. C. C. Miller, of Marengo, Ill. Dr. Miller is one of the best-known writers in the U. S. In each issue of GLEANINGS he gives us a page or two of short notes commenting on articles found in the various American and foreign bee-journals. These are not only interesting but valuable. Very few bee-keepers have the time to read all the bee-journals, even if they could afford it, and you will get in Stray Straws notes relating to bee culture from all over the world.

Pickings from Our Neighbors' Fields.

By Stenog. In each issue will be found immediately following the last-mentioned articles, another series of short notes picked up from the various bee-papers, with comments by Stenog. This department has been here now for nearly three years, and is full of interesting and witty matter. You have to read Stenog's writings to appreciate them. We can not do them justice in a brief description.

Our Homes and High-pressure Gardening.

By A. I. Root. Will be continued as heretofore, and in the editorial column Mr. E. R. Root will continue to give the latest developments in bee culture.

Bee-keeping in Cuba.

Mr. J. H. Martin (Rambler) is now in Cuba, and will contribute a series of articles on Cuban bee-keeping. He will give his experience in building up in six months an apiary of 300 colonies from 50 nuclei, and tell of his raising comb and extracted honey at the same time.

Notes of Travel.

As usual, this column will be run from time to time containing articles of interest on the travels of one of the editors of GLEANINGS.

SPECIAL OFFERS.

Offer No. 21--GLEANINGS IN BEE CULTURE six months, to any one not now a subscriber, for 25 cents.

Offer No. 24--Parties ordering goods at regular prices in our catalog to the amount of $10.00 or more are entitled to GLEANINGS at 50 cents per year. You may order as many years' subscriptions as you choose at this rate, but an increase in the amount of the order for supplies will not make any further reduction in the price of a year's subscription—the lowest rate being 50 cents a year. If you order Root's goods of any agency be sure to mention the fact, giving date, amount of order, and agent's name, we will give you the benefit of the offer.

Offer No. 25--For $1.10 we will send GLEANINGS one year and a Clark smoker, postage 20 cents extra. Or, for $1.35 we will send a Standard Corneil or a Vesuvius smoker, postage 25 cents extra.

Offer No. 26--For $1.75 we will send GLEANINGS one year and our cyclopedia on bees, the "A B C of Bee Culture of 500 pages, 1903 edition.

Old as Well as New subscribers may take advantage of these offers, except No. 21, but all arrears or back subscriptions must first be paid at $1.00 a year. Refer to offers by number to avoid mistakes.

End of Title